MINING WORLD

METAL SHOW EDITION

INDUSTRY VIEWS

THE PALEY REPORT

Page 61

SEPTEMBER, 1952

Vol. 14 No. 10

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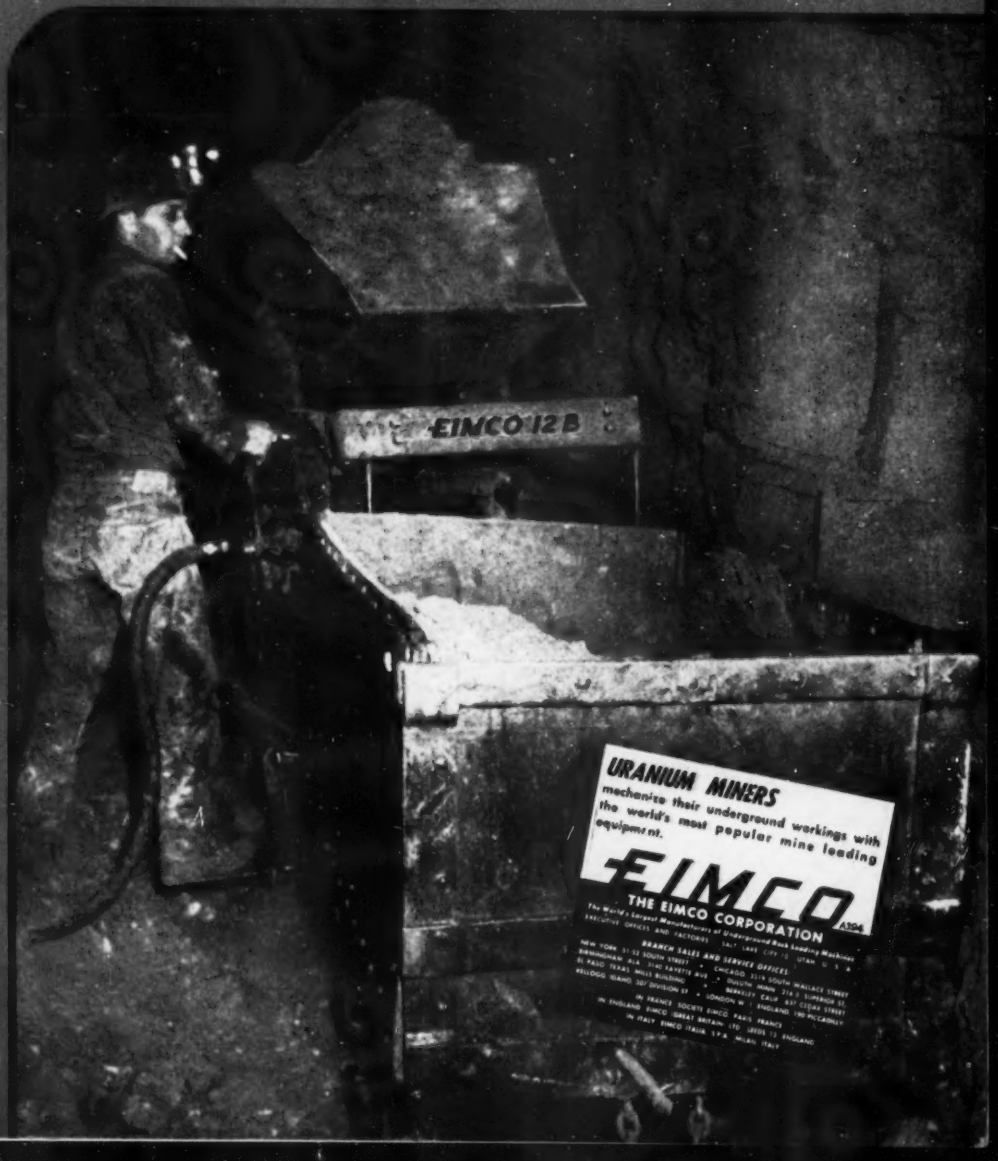
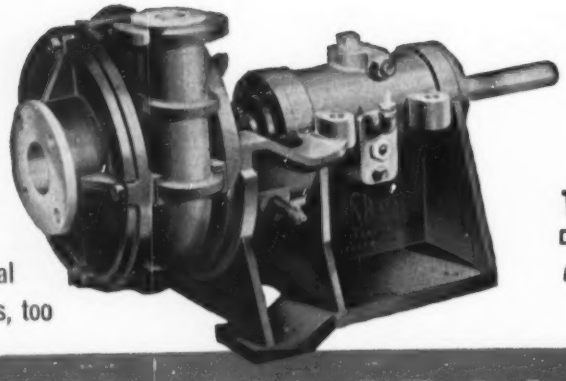


How much can you save?

DOLLARS SAVED PER YEAR BY HYDROSEAL PUMPS BASED ON 24 HOURS PER DAY–300 DAYS PER YEAR

Because clear sealing water is always flowing into the volute and suction eye of the impeller of Hydroseals, abrasives are kept out of vital areas. This eliminates "double pumping" of material, and gives high initial efficiency which is maintained substantially throughout pump life. Oversized pumps and motors are unnecessary—the initial power consumption of the pump is just about the average power consumption.

All this adds up to significant power savings, often as much as 25% or more. Use the simplified chart shown to figure your own savings with Hydroseals. Write for Catalog No. 552 for complete information.



Vertical pumps, too

THE ALLEN-SHERMAN-HOFF PUMP CO.
Dept. J —259 E. Lancaster Ave., Wynnewood, Pa.
Representatives in Most Principal Cities

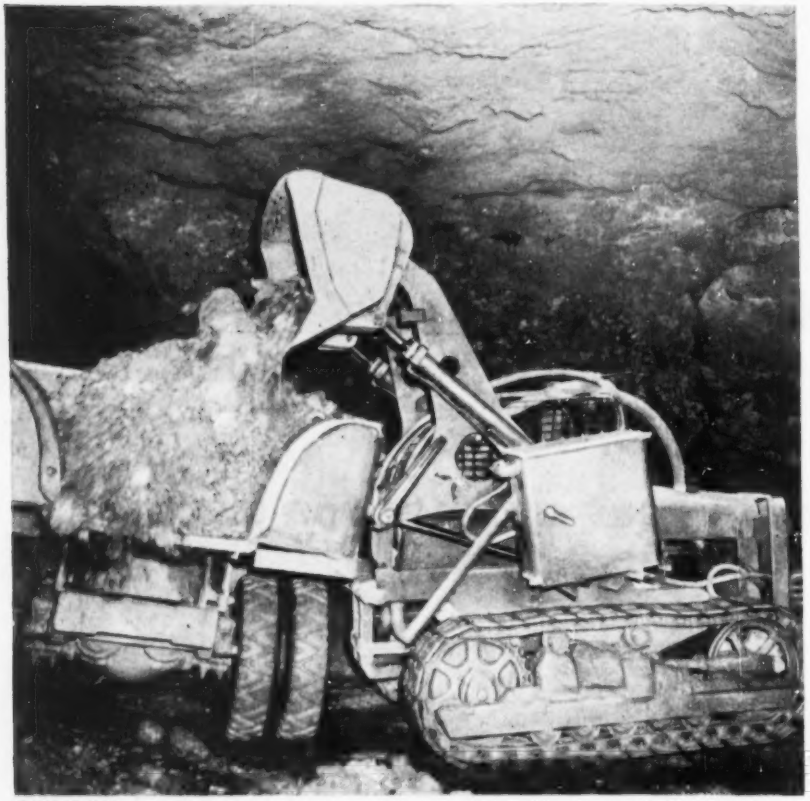
HYDROSEAL

SAND, SLURRY & DREDGE PUMPS
MAXIMIX RUBBER PROTECTED

HYDROSEAL PACKLESS AND MAXIMIX DESIGNS ARE COVERED BY PATENTS AND APPLICATIONS IN THE MAJOR MINING CENTERS OF THE WORLD

Getting the Lead Out in a Tight Spot

International TD-9s Each Load 39 Tons of Ore Hourly for Eagle-Picher



FAST PASS. International TD-9 takes a cubic yard bite of lead ore with Lodover shovel, backs to haul-truck and flips the load overhead into truck.

Three International TD-9s with Lodover shovels speed the loading of lead ore for Eagle-Picher Mining and Smelting Company. These fast-operating overhead shovel units work the underground passages in Eagle-Picher mines near Cardin, Oklahoma.

Average hourly production per unit has been 39 tons of lead ore into the haul-trucks for 516 consecutive working days.

This equipment combination saves time on any loading cycle for it operates without waste motion. The shovel's overhead loading action eliminates tractor turning and makes close-quarter operation practical.

Get full details on this and other money-making equipment combinations from your International Industrial Distributor today. You'll want to operate with International-powered machines from then on!

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

INTERNATIONAL

POWER THAT PAYS

INTERNATIONAL HARVESTER

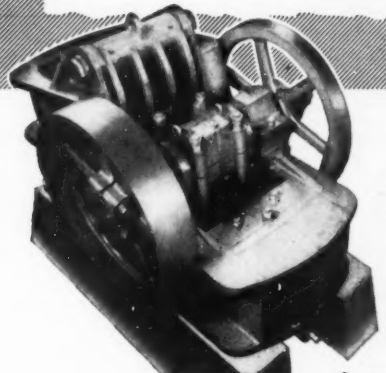
SEE YOU IN DENVER

. . . at the Mining Show, Sept. 22 thru 25. Be sure to see the International Harvester exhibits.

MINING WORLD, September, 1952, Volume 14, No. 10. Published monthly, except April when publication is semi-monthly, at Emmett St., Bristol, Conn. Executive, advertising and editorial offices, 121 Second St., San Francisco 5, California. Subscription in United States, North, Central and South America, $3.00 per year; other countries, $4.00 per year. Entered as second class matter Oct. 10, 1951 at the Post Office at Bristol, Conn., under the act of March 3, 1879. Postmaster: please send notice 3579 to MINING WORLD, 71 Columbia St., Seattle 4, Washington.

breaking copper "hot cakes"

Even for this early method of processing, tools were made to exact specifications: "The head of the hammer must be three palms long and one wide, and sharpened at both ends, and its handle is of wood three 'feet' long".



No matter how primative, craftsmen have always been particular about the tools of their trade . . . always looking for better equipment, better technique. For 50 years, Traylor has fostered this tradition in the mining industry by the steady development of new and more efficient machinery. When you need crushing equipment, buy machinery backed by a half-century of design and production experience . . . machinery that is traditionally better. Buy Traylor.

16 Traylor H and HB Jaw Crushers offer a wide choice of sizes to meet your exact needs.

OUR GOLDEN ANNIVERSARY YEAR

1902 — 1952

TRAYLOR ENGINEERING & MANUFACTURING COMPANY

1453 MILL ST., ALLENTOWN, PA.

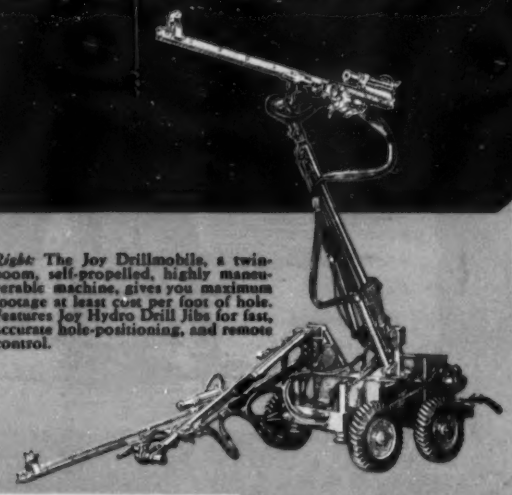
SALES OFFICES: New York • Chicago • San Francisco

Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

a **Traylor** *leads to greater profits*

UNDERGROUND, OR . . .

IT'S JOY EQUIPMENT



Right: The Joy Drillmobile, a twin-boom, self-propelled, highly maneuverable machine, gives you maximum footage at least cost per foot of hole. Features Joy Hydro Drill Jibs for fast, accurate hole-positioning, and remote control.

Above: Joy Hydro Drill Jibs are versatile units; can be mounted as required to suit individual needs.

Above: For high-production loading and haulage of rock and ore, Joy teams of trackless loaders and electric or diesel shuttle cars get the call underground.

Right: Complete range of Joy Stopers includes the new S-91T, with telescopic feed. Requires fewer steel changes, gives more time for drilling.

Below: Joy Wagon Drill specially adapted to drill at any height from toe-holes to horizontals 9' high.

Left: The Joy HS-15 high speed drill for underground blast holes, or core drilling to 500'. Compact and easy handling, with "in-line" vibrationless drive.

DON'T MISS THE JOY EXHIBIT AT THE 1952 MINING SHOW

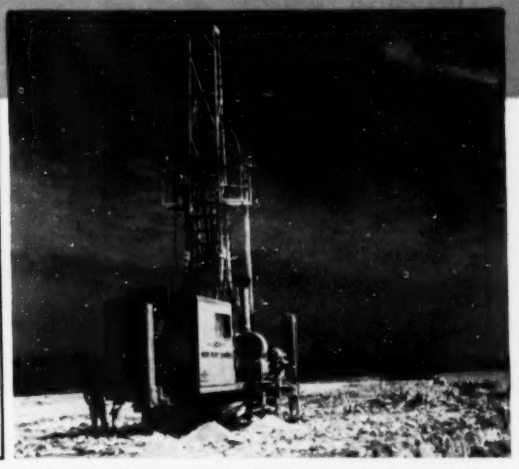
For the best in mining equipment, see JOY—both in the Exhibition Hall and outside—at the Denver Show. The latest developments in equipment for drilling, loading, hauling, and prospecting are the nucleus for a display of the world's most modern types of mining machinery . . . for top production efficiency and lowest costs UNDERGROUND OR ON THE SURFACE.

. . . ON THE SURFACE

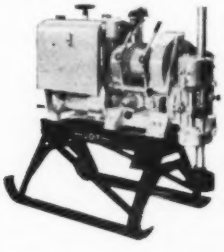
FOR GREATER TONNAGE FOR LOWER COSTS

Above: Joy builds a complete line of "Silver Streak" Hand Tools, cadmium-plated for rust protection and easier running in.

Above: Joy Wagon Drills (Medium and Lightweight models) are easily maneuvered units with positive locking brakes for quick set-ups and balanced drilling on any terrain.



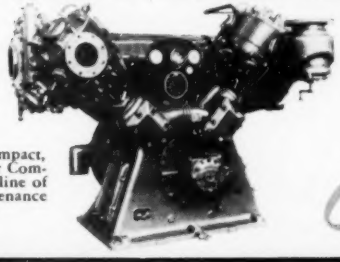
Above: Joy Champion Rotary Drills set absolutely new standards in high-speed, economical blast hole drilling, far outperforming all others. Built in two self-propelled models, for diesel, gasoline engine or electric motor drive.



Above: Joy Core Drills range in capacity from 250 to 1750 feet of 1¾" hole. Screw feed or hydraulic types—gasoline, diesel, air or electric drive.

Left above: Joy's popular Series 80 Portable Compressors, with the famous "Econo-Miser" load control, are built in seven sizes, from 60 to 630 CFM.

Above: Joy Hydro Drill Jibs are readily adaptable to truck-mounting, etc. for secondary drilling or toe-holes in quarries or open-cut mining.



Right: Joy pioneered the compact, modern "package-type" Air Compressor—offers a complete line of highly efficient, low maintenance airplants up to 3656 CFM.

Consult a Joy Engineer

W&D M-3363

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

PROGRESS IN THE MAKING

Missouri lead mine—about 1890. The "new-fangled" steam hoist in the background was beginning to supplant the muscle-operated hoist in the foreground.

An enlargement of this photo suitable for framing is yours for the asking.

Times Have Changed...

Blasting practices of yesterday have gone the way of the hand hoist!

Once, mining mostly was a matter of "muscling" rock. Holes were drilled with hand steel. Blasted rock was hoisted to the surface with hand windlasses. Then, progress brought machine drills and fast power-hoists—and important improvements in blasting techniques.

The latest major improvement in underground blasting practices is the use of milli-second delay detonators—pioneered by Atlas in the ROCKMASTER Blasting System. Now the miner really can control the time of the application of explosives energy to blast out more ore at lower cost.

ROCKMASTER blasting offers control over breakage, throw, noise, and vibration. And improvements in this blasting *system* constantly are being made. With proper drill patterns and loadings, miners are getting results far beyond past expectations.

Find out how you can bring your blasting methods up-to-the-minute. Send for the free 20-page booklet on ROCKMASTER blasting.

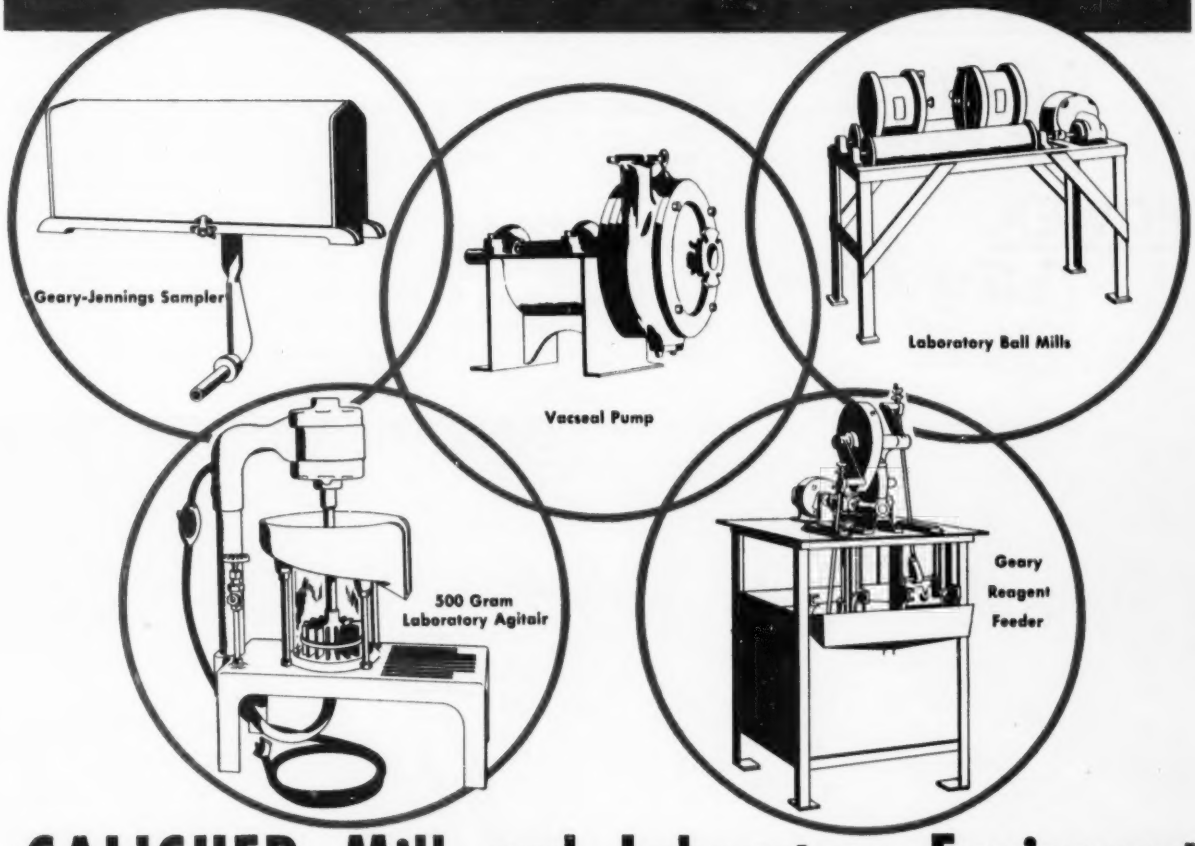
Offices in Principal Cities

ATLAS EXPLOSIVES *"Everything for Blasting"*

CHEMICALS ATLAS EXPLOSIVES

SAN FRANCISCO 4, CAL. ATLAS POWDER COMPANY SEATTLE 1, WASH.

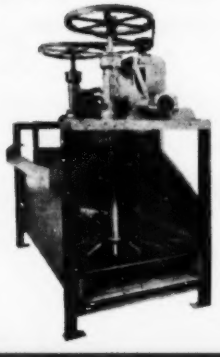
ACCEPTED IN THE BEST METALLURGICAL CIRCLES!



GALIGHER Mill and Laboratory Equipment

The items of Galigher equipment pictured above, plus the Davis Agitator, are used in mill and university laboratories throughout the world . . . widely recognized as indispensable metallurgical tools in both ore testing and ore production.

Detailed information on your request.



Visit Our Booth No. 426 at Denver, Sept. 22—25

A Galigher representative will be at your service at the AMERICAN MINING CONGRESS Show to demonstrate and explain the scope of our service in the field of metallurgy.

THE GALIGHER CO.

CONSULTATION • ORE TESTING
PLANT DESIGN • CONSTRUCTION

METALLURGICAL DIVISION — ENGINEERING SERVICE

ELEVATION:
12,000 feet
PRODUCTION:
4 to 5 buckets per minute
POWER:
"Caterpillar" Diesel

THIS 3/4-yard Lorain Shovel is powered by a "Caterpillar" D318 Engine. The rig is owned by C. Ryan and Son, Lakewood, Colorado. Here you see it working near Climax at an elevation of 12,000 feet. It's loading molybdenum ore into trucks on the average of 4 to 5 buckets per minute. Lee Ryan says: "We use 'Cat' power almost exclusively because we can always depend on it—even at this extreme altitude."

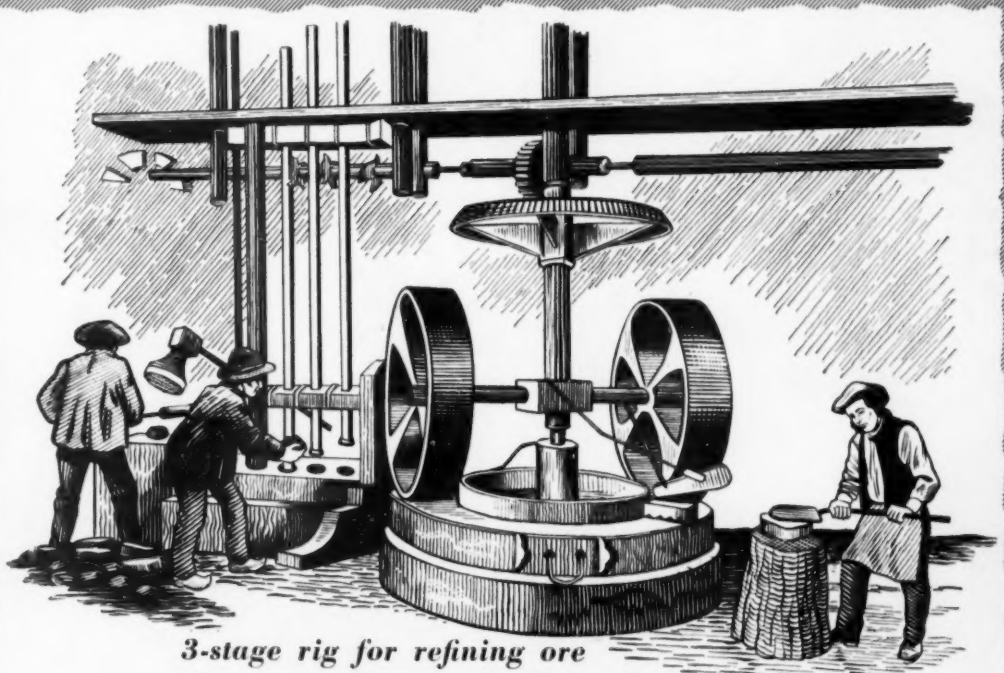
More and more "Caterpillar" power is being specified for use in shovels and other mining equipment because—quoting Lee Ryan again—"you can depend on it." There's a good reason. "Cat" Diesel Engines are *built*—not assembled. Their outputs are *as advertised*—you can count on them to deliver full horsepower. They burn low-cost fuel without fouling. And they're practically foolproof to operate.

There's a "Caterpillar" Diesel to meet *your* requirements. These big yellow engines range in size from 52 HP to 500 HP. For complete *facts* about them, see your nearby "Caterpillar" Dealer. Ask him to show you records of their performance in the mining field. That's the best way of measuring what you can expect from them in your equipment!

CATERPILLAR, San Leandro, Calif.; Peoria, Ill.

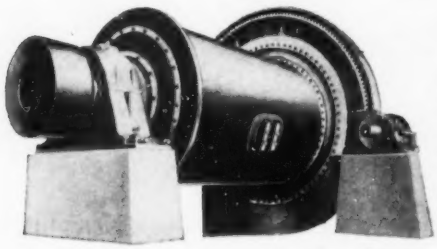
CATERPILLAR
REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT



3-stage rig for refining ore

After ore was reduced to manageable size, it was transferred by hand to the stamping mill and finally ground to powder. Crude as it may seem today, this rig was once the ultimate in production efficiency.



History excitingly illustrates the speed with which our machine age advances. And Traylor is proud of the part it plays in this movement. For 50 years, Traylor has led in developing new designs and producing better machinery for the mining industry. In that time, Traylor equipment has gone all over the world, building a name famous for efficient operation. It takes experience to come up with the right answers consistently. Traylor has experience . . . half a century of it. Use it to your advantage.

Traylor builds four types of grinding mills in a wide choice of sizes to meet your exact needs.

OUR GOLDEN ANNIVERSARY YEAR 1902 1952

TRAYLOR ENGINEERING & MANUFACTURING COMPANY

1443 MILL ST., ALLENTOWN, PA.

SALES OFFICES: New York • Chicago • San Francisco

Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

a **Traylor** *leads to greater profits*

AND READY FOR ANY JOB

P&H ***MAGNETORQUE**** **Electric**

Swing is 15% to 25% faster than any 2½ yd. shovel

If it's husky strength you want, this is it! Tough all-welded construction throughout to take pounding and shock loads that would K.O. less rugged machines. It means steady digging — less maintenance — down through the years.

If it's speed, you have it with Magnetorque — speed to out-produce any other machine in the 2½ yd. class — with a swing that's 15% to 25% faster. It's the greatest shovel improvement in 20 years. We'll gladly tell you where to see the 955-A working nearest you. Ask today!

If you want larger capacity, ask for facts about the Model 1055 (3½ yd.).

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.

HARNISCHFEGER
CORPORATION
4572 W. National Avenue • Milwaukee 46, Wisconsin

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

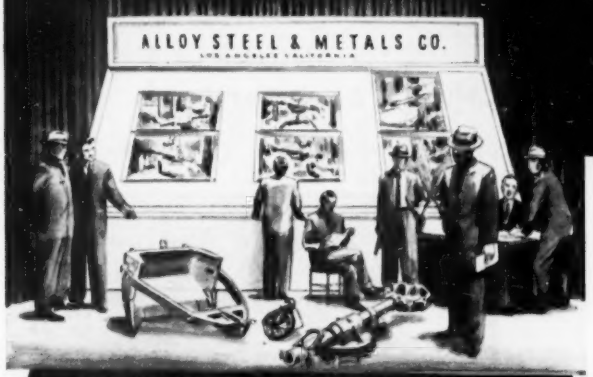
AMERICAN MINING CONGRESS

AMC

See your Pacific Pals at the Show

BOOTH 709

AMERICAN MINING CONGRESS
DENVER, COLORADO
SEPTEMBER 22, 23, 24, 25



THE NEWEST THINGS IN MINING

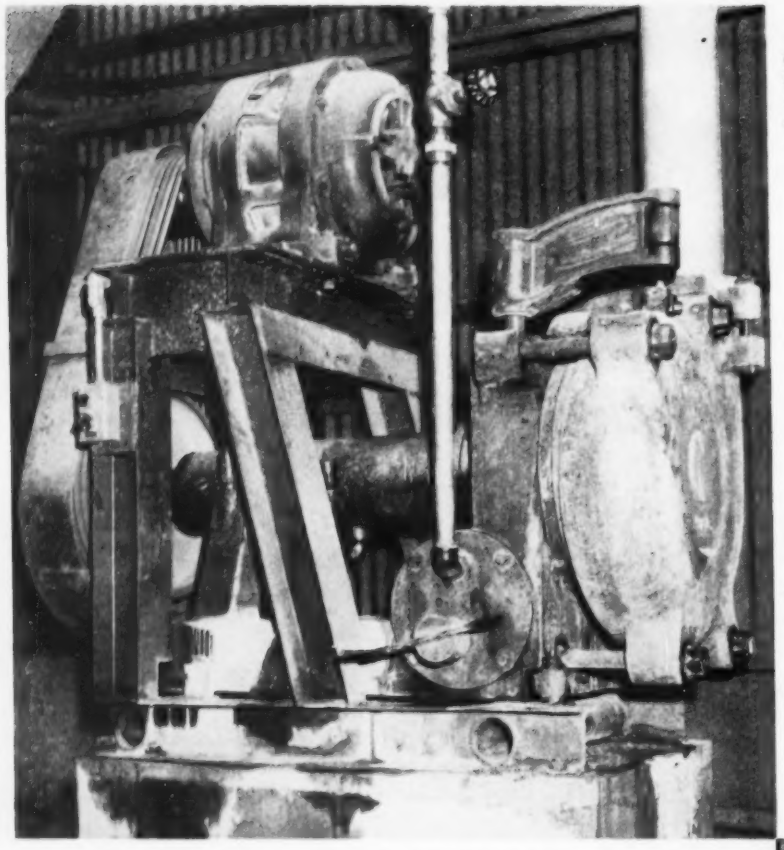
ALLOY STEEL & METALS COMPANY

1848 East 55th Street
Los Angeles 58, California
MAILING ADDRESS:
Box 15323 Vernon Station
Los Angeles 58, California

In our display booth we will show action pictures of a Pacific "Slushmaster" Scraper making 90° turns with the help of the Pacific "Round-The-Corner" Sheave Block, and a Pacific Half-Shroud Sheave Block. The actual products will also be on display.

Operation of the "R-T-C" is hard to understand but easy to appreciate. Experience shows that this Pacific Team cuts the cost of mucking out a square-set round in half! The action pictures, taken at Bunker Hill And Sullivan Mining And Concentrating Co., Kellogg, Idaho, are blown up to 20"x24" size and illuminated from behind. Once you see them, any mystery about how the "R-T-C" works will be cleared right up. In addition, we will distribute a new Bulletin No. 232 which describes the operation in detail. See you at the show!

BE SPECIFIC—ORDER PACIFIC—Jaw Crushers, "Slushmaster" Scrapers, Sheave Blocks, "Round-The-Corner" Sheave Blocks, Sheave Anchors, Bit Knockers—ask for Catalog No. 215.



*8" **WEMCO** Sand Pump handling 1600 GPM of -3/16" non-metallic mineral pulp.*

WEMCO SAND PUMPS

- ***a size for every need***
- ***continuous pumping on every job***

Low-cost, high profit pump operation requires the **right size** pump, built to give reliable, rugged performance — **all the time.** WEMCO Sand Pumps are chosen by mill operators throughout the world because they best fulfill these requirements. They know the importance of these key WEMCO design features:

- ***long-life, hard alloy wearing parts***
- ***simplicity of design for rapid parts replacement***
- ***centrifugal mechanical seal***
- ***external pump adjustments***

SIZES: 1¼", 1½", 2", 3", 4", 5", 6", 8" and 10".
CAPACITIES: 20 to 3600 GPM.
PUMP HEADS: 20 to 100 feet and higher.
RUNNER DIAMETERS: Several sizes for each pump, according to required duty.
RUNNER PORTS: Number and size of opening to fit the specific job.

*1¼" **WEMCO** Sand Pump handling ferrosilicon pulp in HMS circuit.*

WEMCO
WESTERN MACHINERY COMPANY
760-766 FOLSOM STREET · SAN FRANCISCO 7, CALIFORNIA

Mobil Mills · Coal Spirals · HMS Thickeners · HMS Pumps · Sand Pumps · Cone Separators · Drum Separators · Fagergren Laboratory Units · Agitators · Fagergren & Steffensen Flotation Machines · Hydroseparators · S-H Classifiers · HMS Laboratory Units · Dewatering Spirals · Thickeners · Conditioners · Densifiers · Attrition Machines

For profitable results in pumping, specify WEMCO Sand Pumps!

PRINCIPAL OFFICES

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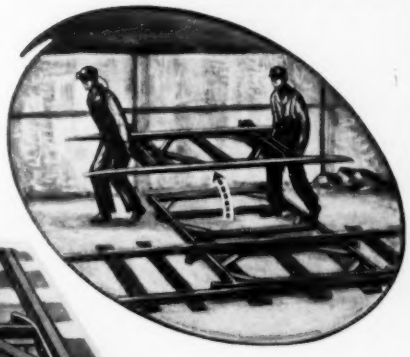
- Corporation Commercial Sudamericana S.A., Casilla 505, Lima, Peru

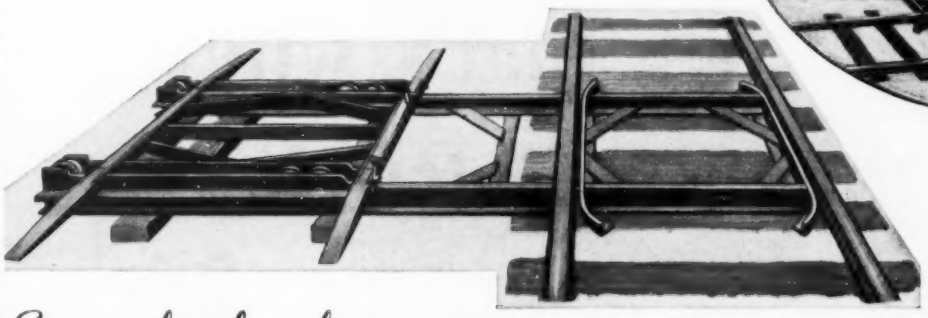
The Canton—in Action!!

Loads entire train on a single track

See it at the Denver Show

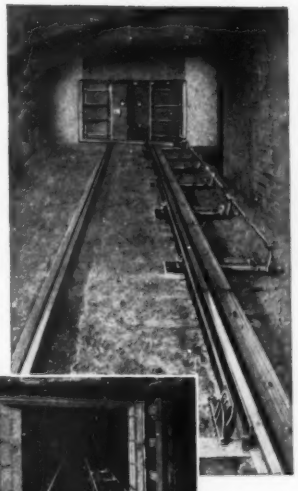
This famous economy device can be installed on any track of gauge and rail now in use. Its operation is simplicity itself, pushing empty car on track by locomotive, then moved by hand to transfer section, permitting locomotive and cars to pass. Train is pulled out all at one time. Two men in two minutes can take down, to move the 3 units to new location when desired. . . . no alterations required for track or rails. Timken Roller Bearings enable easy shunting of heavy cars to maximum weight of 6 tons.





Saves miles of costly tramming

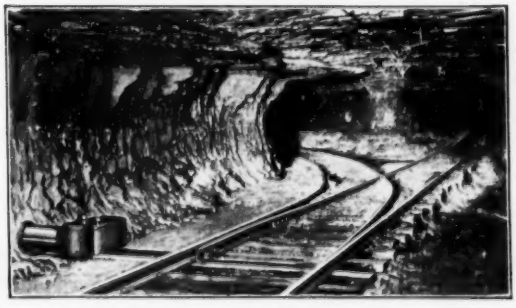
The "American" Mine Door



These are the savings AMERICAN MINE DOORS make for you. 1. No stops. Trips move at full speeds. 2. No trapper boy accident liability. 3. Operation is mechanical . . . no electrical upkeep. 4. Air flow is constant; improves ventilation. 5. More tonnage is hauled out. In writing for catalogs, please use street and zone numbers.

Full Speed . . . More Production

The "Canton" Electri-Throw



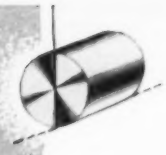
Increase production by eliminating the stop at switch points. No more stopping and starting. No jumping off and on train to throw switches. Motorman selects his track, switch points are thrown to desired route by motorman as train moves at full speed. Eliminating the stop increases production. Speed-up makes more trips, more tonnage per day, more profits. Increases safety by automatically removing the necessity for a man on the track to throw switch points. No man—no accidents.

Dustributors—Mechanical Track Cleaners—Safety Signal Systems—Cable Splicers—Car Transfers—Automatic Doors—Switch Throws—

The American Mine Door Co.

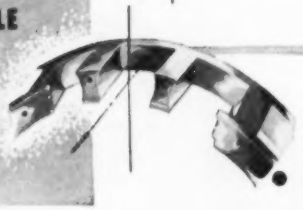
2071 Dueber Ave. **Canton 6, Ohio**

RIGHT-ANGLE
ROLLER ENDS, precisely square to avoid end-rub, oscillation and side-shock.



RIGHT-ANGLE
BEARING SURFACES with parallelism that results in unwavering rightline rolling.

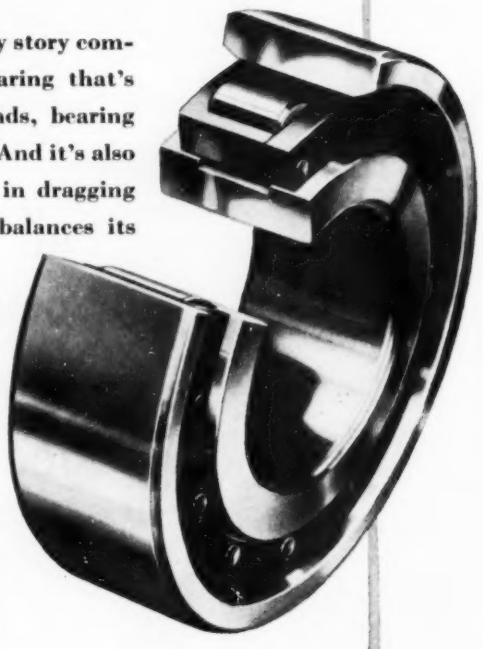
RIGHT-ANGLE
SEPARATOR SLOTS accurately machined to prevent roller skew, slide and uneven wear.



Made *RIGHT*...

...that's why they *ROLL RIGHT!*

... Yes, that's the Rollway Bearing quality story compressed into a sentence. For a roller bearing that's held to right-angle trueness of roller ends, bearing surfaces and separator slots doesn't skew. And it's also free from oscillating action that results in dragging end-rub and destructive side-shock. It balances its own internal forces . . . promotes true orbital rotation of rollers within the races . . . reduces vibration and fatigue.



ROLL the RIGHT Way with ROLLWAY

Let's examine your bearing problems involving either radial or thrust loads, to determine exactly the kind of bearings you need. Our years of specialized bearing experience, plus complete engineering and metallurgical services, are always at your command. No cost. No obligation. Just write or wire Rollway Bearing Co., Inc., Syracuse, N. Y.

ROLLWAY BEARINGS

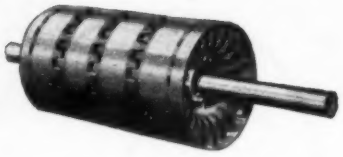
Complete Line of Radial and Thrust Cylindrical Roller Bearings

SALES OFFICES

SYRACUSE	DETROIT
PHILADELPHIA	CHICAGO
BOSTON	TORONTO
PITTSBURGH	HOUSTON
CLEVELAND	LOS ANGELES

Which Answers Your Tramp Iron Problem BEST?

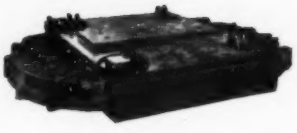
MAGNETIC PULLEYS?



Powerful, air cooled electro magnetic pulleys are ideal where well loaded conveyor belts are used. Installed as head drive pulley, tramp iron is discharged automatically. Low operating cost, long life and extreme power characterize this workhouse of the Dings line. Catalog C-1001A tells you why this magnet is exceptionally efficient.

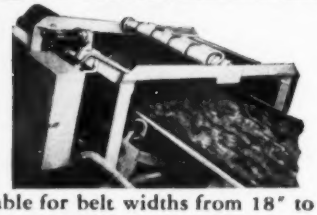
Dings *non-electric, self-energized* Perma Pulley magnets are recommended where burden depths do not exceed 3". Within this range, these are the magnets to use because of their unsurpassed concentration of magnetic strength near the surface. Catalog C-1007A.

SUSPENDED RECTANGULARS?



Power close and power that searches down as deep as 30" to yank tramp iron out. If the Dings RM rectangular won't do it, it can't be done. Triple pole, double gap design. Install horizontally, vertically or at an angle above belt conveyors or in chutes. Self-cleaning fully automatic models also available. Write for details.

MAGNETIC DETECTOR?



The Dings Magnetic Detector instantly signals when any magnetic object large enough to be damaging passes through the detector zone. Can be hooked up to sound an alarm and stop the belt. Ideal protection for crushers, grinders, pulverizers, etc., where belt speeds are so excessive or burden depths so great no magnetic separator can function successfully. Detectors are available for belt widths from 18" to 72". Two types are available. One employs an electro magnet and the other, a permanent magnet. Performance of the two is comparable.

Magnets shown here are available in size ranges for most applications. Special magnets can be made for any application. Write today for recommendations.

DINGS MAGNETIC SEPARATOR CO.
4719 W. Electric Ave., Milwaukee 46, Wis.

Dings Certified MAGNETIC STRENGTH

Capacity loads of the abrasive ore are heaped into the bucket by traction-crowding. The wide bucket spills material into every corner of the hauling truck's body.

Nevada-Massachusetts Co.

TAKES OUT TOUGH TUNGSTEN

with a T6 TRAXCAVATOR® SHOVEL

The nation's largest tungsten mine loads tough tungsten ore with a powerful T6 TRAXCAVATOR Shovel. Ramming into the huge piles of loosened rock, the T6 comes up with a full bucket... pivots and sprints to 6-yd. hauling units... dumps its load carefully into the high bodies... is back for another load in seconds. This cost-cutting cycle is repeated—again and again—at several stockpile sites at the mine during the eight-hour work-day. The T6 has served the Nevada-Massachusetts Co. through 4680 operating hours... and has a record for low costs and repair.

The Superintendent of the Sutton No. 1 Pit says, "We feel our T6 is doing an excellent job in the toughest of conditions. Its mobility enables us to service many stockpiles at varying distances in the pit. Easy handling and good controls make it easy for the operator to maintain high production."

You can handle the toughest pay dirt or overburden at the lowest possible cost with a TRAXCAVATOR Shovel...and your "Caterpillar" Dealer can show you why and how. Call on him for full details on the model that can do your work... or write direct.

CATERPILLAR TRACTOR CO., Peoria, Illinois

TRACKSON

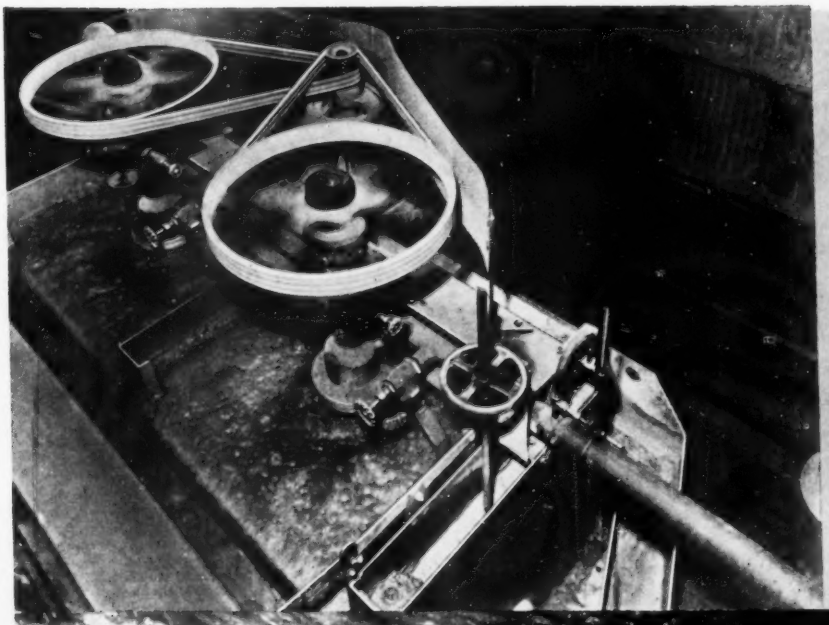
REG. U. S. PAT. OFF.

A SUBSIDIARY OF CATERPILLAR

TRAXCAVATOR® SHOVELS
TRACLOADERS
PIPE LAYERS
ANGLEFILLERS

may be PROFITS *today!*

Here's the *New* Denver "Sub-A" Super Rougher Flotation Machine to recover more values . . .



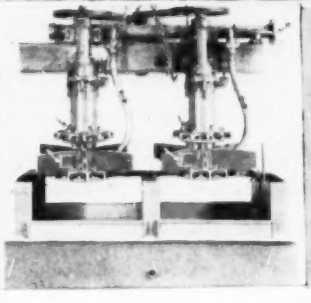
Here is a flexible Flotation Machine that gives intense aeration and short-distance froth overflow, so important on extremely low-grade ores and coarse-grind feed. As a scavenger machine at the tail end of a circuit, the unit increases your mill efficiency by lowering tailings losses.

Featuring a low pulp level, this NEW Denver "Sub-A" Super Rougher Flotation Machine offers controlled aeration, intense agitation, and regulated feed. These are the flexible tools your flotation engineer needs to get results that pay greater profits.

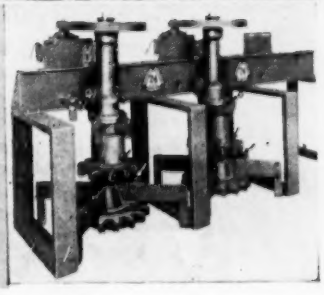
The world's leader in flotation engineering, Denver Equipment Company adds the Denver "Sub-A" Super Rougher Flotation Machine to its long list of continuous flotation machine improvements. You can buy all of your ore dressing equipment from DECO, you get everything from testing to dryer from one company, one responsibility, without a premium.

Find out how you can get more PROFIT out of your ore with a Denver "Sub-A" Super Rougher Flotation Machine. Phone, write or wire today!

For simplified repair, the entire assembly may be removed easily. All wearing parts are standard and interchangeable with other Denver "Sub-A" machines. Single or double impeller mechanisms provide maximum aeration and are furnished to meet your specific recovery and frothing objectives.



Conversion units are built for most makes of flotation tanks. You get the same mechanisms that are standard on the new Denver "Sub-A" Scavenger Machine. This gives you the advantages of standard, reliable DECO service and efficiency. More Denver "Sub-A" Flotation Machines are used for roughing and cleaning than all other makes combined. Find out how you can profit by converting to Denver "Sub-A."



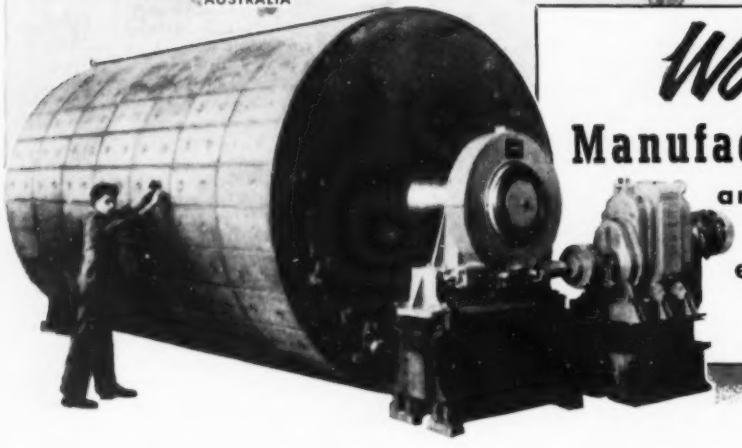
COMPANY

Engineering

On display at the American Mining Congress Denver, Colorado, Sept. 22-25

Worldwide Manufacturing Facilities

another strength of the Dorrco Worldwide engineering network



Under construction in France by Dorr Oliver SNaRL . . . an Oliver Drum Filter with 10' dia. drum and complete drive set up for shop alignment.

Oliver Filters are available through Associated Companies and Representatives of The Dorr Company in every mining area of the world except North America, Australia and the Philippines, where they are directly obtainable through Oliver-United Filters, Inc.

Strategically located facilities for the manufacture of Dorr and Oliver equipment are available in eleven countries of the world. These facilities for local fabrication, coupled with the sales engineering and technical services available through the following Associated Companies and Representatives of The Dorr Company abroad, provide a completely flexible network of engineering organization . . . established to serve worldwide metallurgy with maximum effectiveness.

We invite you to consult any of the following, or, if you prefer, address your inquiry to The Dorr Company at Stamford and it will be forwarded to the area best able to serve you.

In Europe: Dorr-Oliver Companies in England, Belgium, The Netherlands, France, Germany and Italy.

In South Africa: E. L. Bateman Pty., Ltd., Johannesburg.

In India: Dorr-Oliver (India) Limited, Bombay.

In Australia: Hobart Duff Pty. Ltd., Melbourne.

In Japan: Sanki Engineering Co., Ltd., Tokyo.

In South America: Fiore Company in Buenos Aires; Serva Ribeiro in Rio de Janeiro and Sao Paulo; John Lindsay in Caracas; and conveniently located Dorr Resident Engineers.

Better tools TODAY to meet tomorrow's demand

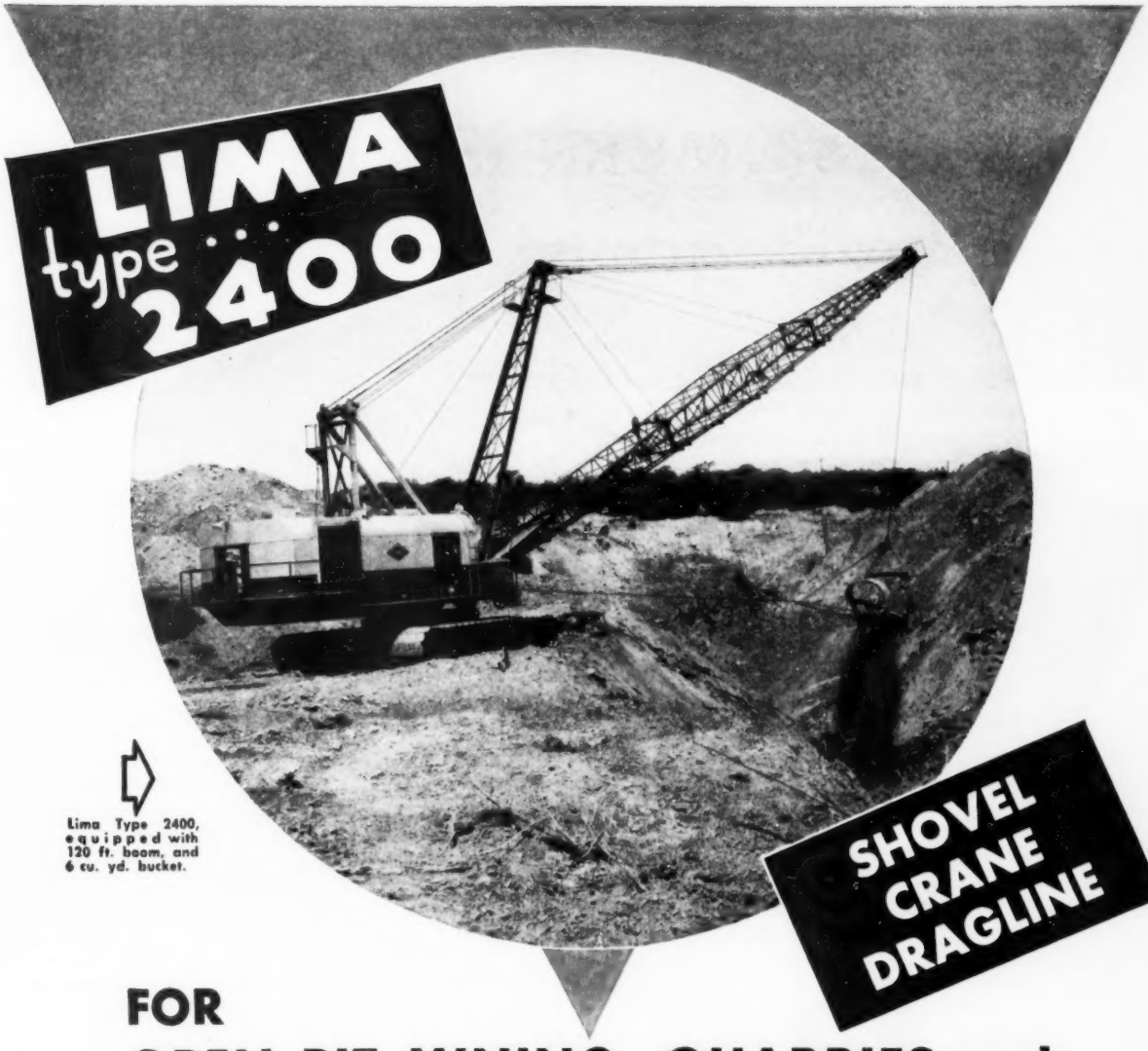
DORRCO

DORR

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Offices, Associated Companies or Representatives in principal cities of the world.



Lima Type 2400, equipped with 120 ft. boom, and 6 cu. yd. bucket.

FOR OPEN PIT MINING, QUARRIES and HEAVY CONSTRUCTION

The LIMA Type 2400 is a big, full mechanical clutch type shovel, dragline and crane with a combination of power, speed and stamina that gives complete satisfaction in all classes of work. It has been given the acid test for high output in rock and fast profitable operation in coal or metal mining. You will recognize at a glance, its heavy-duty engineering which means fewer delays on the job. You will like the smooth, efficient power that flows from its big husky diesel engine; the friction free drums and shafts that rotate on anti-friction bearings and the ease of control through air actuated clutches. These advantages and many more all add up to performance that pays off with fewer delays and bigger profits. You will like the Type 2400—6 yd. Shovel, 110 Ton Crane.

Baldwin-Lima-Hamilton Corporation
Construction Equipment Division
Lima, Ohio, U.S.A.

CAPACITIES: Shovels ¾ to 6 cu. yds. Cranes to 110 tons. Draglines, variable

Cable Address: LIMASHOVEL

OFFICES IN PRINCIPAL CITIES OF THE WORLD

BALDWIN BLH LIMA-HAMILTON

BALDWIN-LIMA-HAMILTON

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS • TRUCK CRANES

For Greater Mine Safety— Increased TONNAGE

get first-hand facts on this M·S·A EQUIPMENT

Booth No. 608—Metal Mining Show

Helping your efforts to step up mine production and boost overall mine safety is our job here at M.S.A. You'll see these products, plus many more, at our Booth No. 608—Metal Mining Show. You are cordially invited to come in and visit. We'll be looking for you!

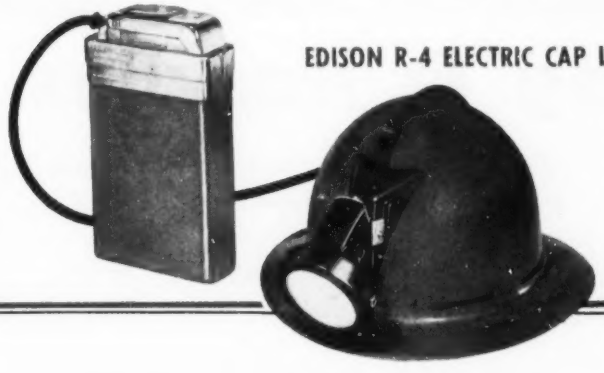
M·S·A MinePhone Communication System

With mechanization increasing production, your haulage system must "keep ahead" to realize maximum tonnage. The M.S.A. MinePhone helps fill this need by providing a modern underground system that maintains continuous trip movements throughout the mine.

The M.S.A. MinePhone brings greater underground safety, too. Track conditions, derailments, or roof falls can be reported immediately. Time-consuming calls to each individual are eliminated—a big advantage in emergencies. You'll find complete details on this modern, two-way voice communication system in our booth.

Let us show you how the MSA Mine Phone can—

- ★ **Minimize chances of error and accidents.**
- ★ **Coordinate trip traffic for safer, more productive haulage control.**
- ★ **Prevent excessive stop-start strain on haulage equipment.**
- ★ **Maintain control of empties for peak loading efficiency.**
- ★ **Eliminate trip delays.**
- ★ **Reduce frequency of motormen getting on and off trips—save time—avoid injury.**



EDISON R-4 ELECTRIC CAP LAMP—M·S·A TYPE K SKULLGARD

This popular combination is helping miners bring into play every production advantage of mechanization. The Edison R-4 Lamp is designed to fill your needs for brilliant, unfailing light. Its construction keeps it on the job shift-after-shift, for years. The impact, moisture and oil resistance of the Type K Skullgard has been proved in underground operations everywhere. Let us show you how this production-safety team can benefit your operation.

M·S·A SELF-RESCUER

For immediate breathing protection in emergencies caused by fire or explosion, M.S.A. developed the Self-Rescuer. This Bureau of Mines approved safety item provides the precious minutes of emergency breathing protection so vital to the miner while traveling through carbon monoxide to fresh air.

M·S·A PNEOLATOR

This compact, portable unit assures maximum chance of recovery to miners overcome by poisonous gases or asphyxiated from any other causes. Automatically provides oxygen for the lungs at the pre-selected amount and pressure, continuously, effectively, safely. Normal passive return of respiratory muscles produces exhalation.

MSA SAFETY EQUIPMENT HEADQUARTERS

MINE SAFETY APPLIANCES CO.

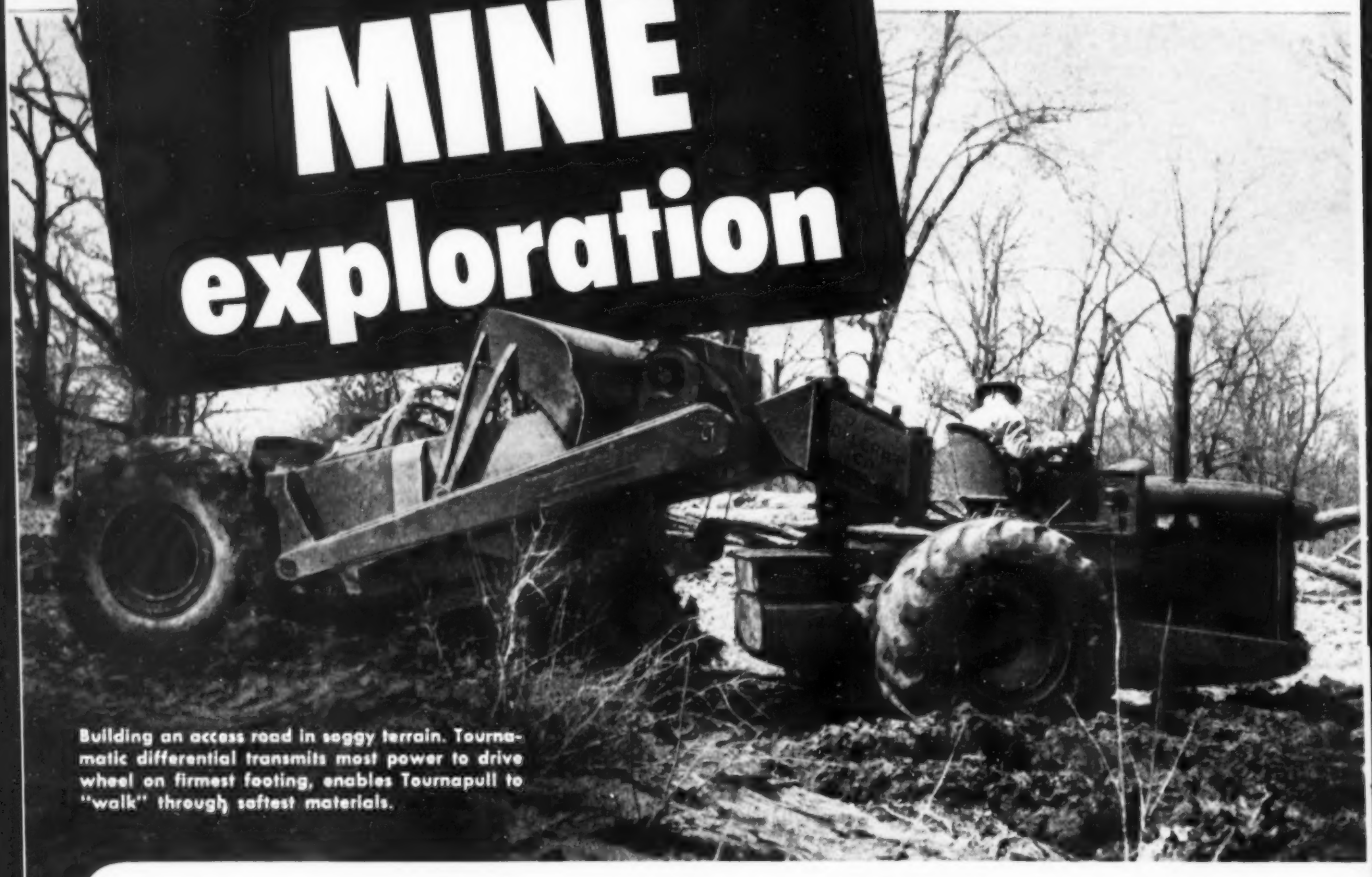
Braddock, Thomas and Meade Sts.
Pittsburgh 8, Pa.

AT YOUR SERVICE:
68 Branch Offices in the United States

MINE SAFETY APPLIANCES CO. OF CANADA, LIMITED
Toronto, Montreal, Calgary, Winnipeg, Vancouver, New Glasgow, N.S.

When you have a safety problem, M·S·A is at your service. Our job is to help you.

Speed your MINE exploration with a



Building an access road in soggy terrain. Tournamatic differential transmits most power to drive wheel on firmest footing, enables Tournapull to "walk" through softest materials.

The self-loading "D" handles

Clears, levels sites for camps and drill set-ups. Eliminates cost of expensive cribbing.

Strips surface material to expose bedrock. Gives you better access to formation.

Builds, maintains and gravels access roads. Fills roads across soft, low areas.

Loads, hauls material from open pits in 9-ton (7-yard) Carryall Scraper.

Hauls in supplies. Carries loads over terrain no other wheeled vehicle can cross.

Levels building sites. Digs sludge basins, drainage ditches and sluiceways.

Moves into any site under its own power — over pavement or cross-country.

Supplies electricity for emergency lighting or temporary equipment operation.

LET EQUIPMENT

R. G. LeTOURNEAU, INC.

Export Division
PEORIA, ILLINOIS, U.S.A.
(Cable Address "BOBLETORNO")

versatile D Tournapull

Stripping overburden of sand, gravel and rock. Low-pressure tires give plenty of traction in the abrasive material. Special 56" wide-base sand tires are available for sand work.

The HIGH-SPEED, self-loading D Tournapull has the versatility needed to speed all the exploratory phases of your mine development. This job-proved unit moves in or around any location at speeds up to 28 m.p.h. It cuts grades accurately, hauls anywhere, and spreads in controlled layers. Its big tires effectively compact material. Where land restoration is required, the "D" is ideal for segregating topsoil, refilling and landscaping. Where ore-bearing soils are to be tested, the 122 h.p. "D" will self-load over 5 bank yards per trip for quick delivery to screens or hopper. Where dams or reservoirs are needed for water supply — ditches or sluiceways for drainage — the "D" moves in, gets the job done fast, and moves on to the next task without delay.

Big low-pressure tires, positive power steer and the unique Tournamatic differential enable Tournapulls to travel slippery saddleback roads or through deep mud and sand which would stall an ordinary truck. Electric scraper and steer controls and a foam-rubber seat give easy operation and easy riding in tough going. These are but a few of the reasons why this fast utility tool speeds search and pilot tasks, cuts costs, and eliminates many inconveniences of exploratory operation. It will pay you to learn more about what it can do for you.

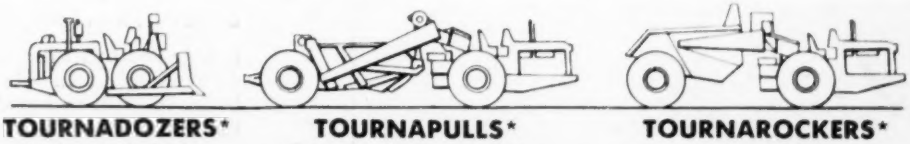
all these jobs:

Dozer blade available. One man can do clearing, build roads, drain, grade and strip.

Plows snow from supply roads. Self-loads, hauls snow, ice from camp sites.

Tournapull, Tournamatic, Carryall—Trademark Reg. U.S. Pat. Off. DP-58-M

See these machines in Denver at the Metal Mining Show



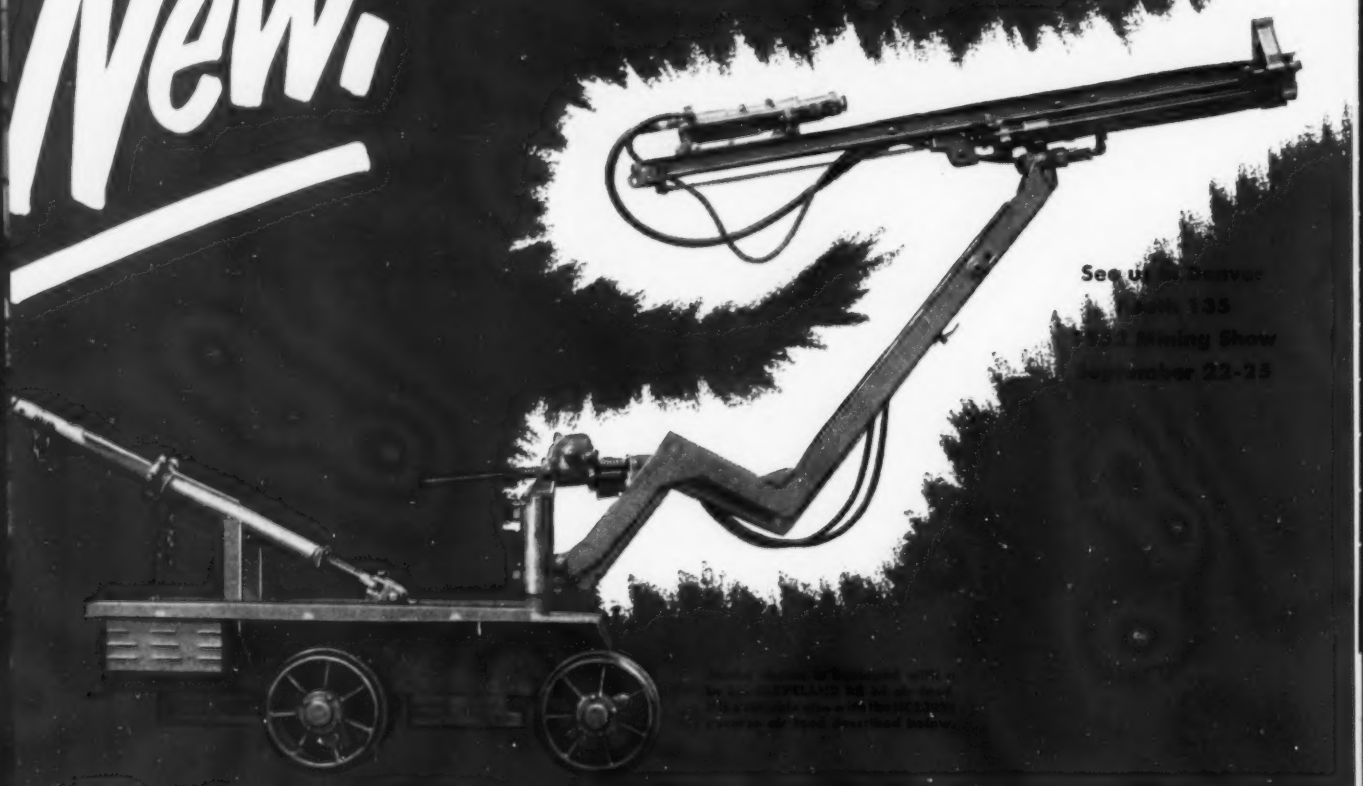
TOURNADOZERS*
186 h.p., 4-wheel drive, speeds to 19 m.p.h.

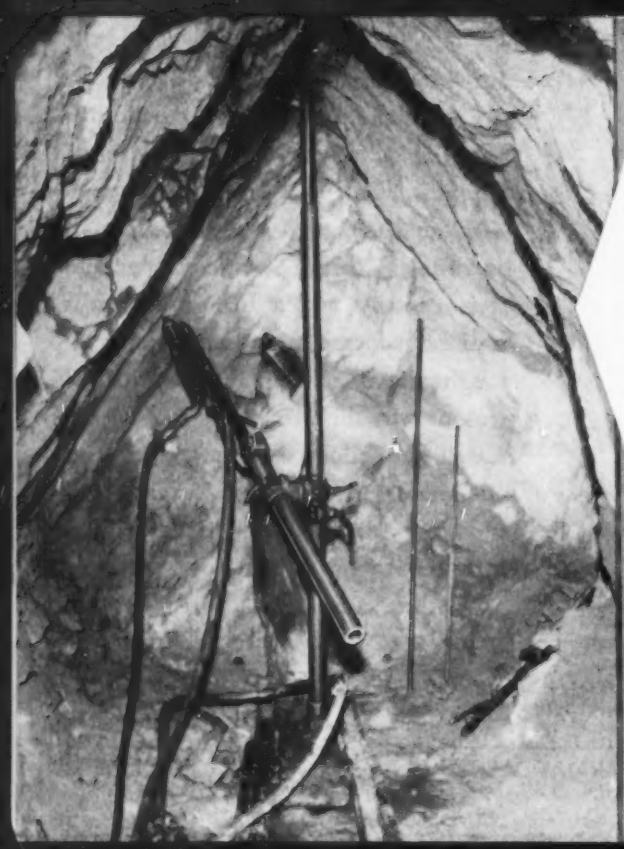
TOURNAPULLS*
7, 16, 27, 42-yd. capacities; speeds, 28 to 39 m.p.h.

TOURNAROCKERS*
9, 18, 35, 50-ton rear-dump haulers

New!

Speeds up





Miners like Le Roi-CLEVELAND HC23RW Reverse Air Feed Drifters

Management does, too

Faster Steel Changes! No swing or dump nuts to loosen and reset. Your miners simply swing drifter on feed cylinder and change steels. It's not only easy — it lets them drill out the round faster.

No Stuck Steels! Positive air feed keeps drills working at peak efficiency, avoids stuck steels.

Higher Drilling Speeds! Positive air feed plus proper force of blow and strong rotation give faster drilling speeds with both steel and tungsten carbide bits. You get longer bit life, too, and drill more footage.

Low Upkeep Cost! No feed screws or feed-screw nuts to wear. No complicated power-feed mechanism to give trouble.

Easy to Operate! Built to lighten the load on your miners. Feed controls conveniently located. Reverse air feed withdraws steel from hole quickly.

Faster Set-ups! The combination of Le Roi-CLEVELAND Air Feed Drifters and air columns gives you a unit that can be set up easily and quickly. And you can get the air column in any height you want.

drilling cycles

Le Roi-CLEVELAND *self-leveling* Mine Jumbo with four-foot steel-change Air Feed Drifter

Saves time drilling lifters! Lets your miners drill the right round for any ground!

You couldn't ask for more from a mine jumbo than the performance you get from this new Le Roi-CLEVELAND. It's got plenty of stuff. And the payoff for you is faster cycles, greater tonnage per man-shift, lower costs! Here's why:

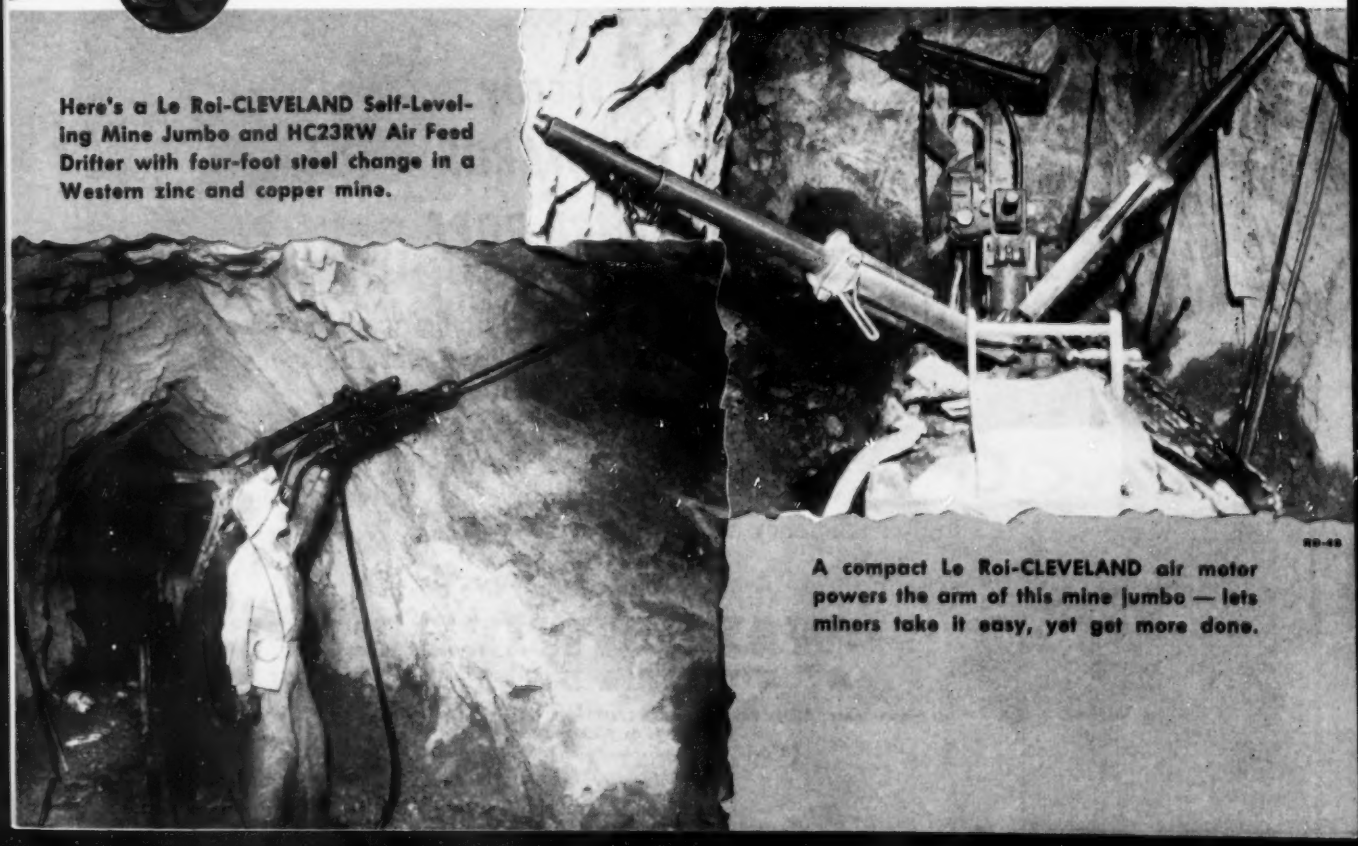
Self-leveling, air-motor-powered arm, lets miners spot and space holes quickly and easily, for the most efficient fragmentation. They don't have to loosen a bolt or tilt a boom, to complete the drilling cycle.

Exclusive rigid screw and gearing mechanism keeps the heading straight, cuts down overbreak and underbreak. Keeps the drifters in line, prevents the steel from binding, reduces chuck wear.

Offset arm provides plenty of clearance to drill lifters — without having to take time out to swing the drill under the arm.

You can get this Le Roi-CLEVELAND Self-Leveling Mine Jumbo in either single-arm or double-arm construction. Write for further information and see for yourself how either model can help you get more done every shift.

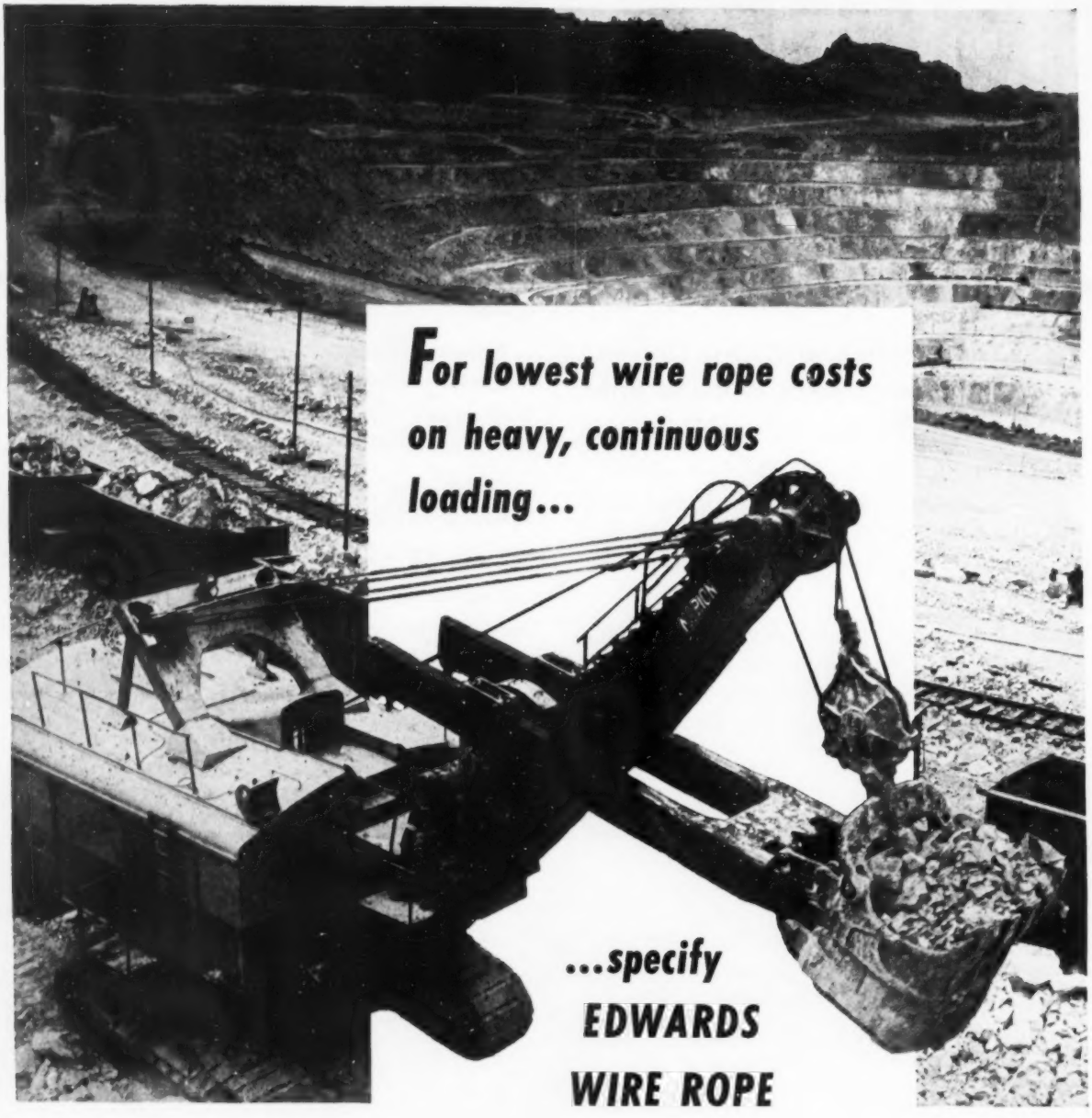
LE ROI COMPANY
CLEVELAND ROCK DRILL DIVISION
12500 Berea Road, Cleveland 11, Ohio
Plants: Milwaukee, Cleveland and Greenwich, O.



Here's a Le Roi-CLEVELAND Self-Leveling Mine Jumbo and HC23RW Air Feed Drifter with four-foot steel change in a Western zinc and copper mine.

RD-48

A compact Le Roi-CLEVELAND air motor powers the arm of this mine jumbo — lets miners take it easy, yet get more done.



Mining, whether open pit, shaft or dredging, demands a lot from wire ropes. These demands have "set the specs" for the manufacture of Edwards Wire Ropes.

From the complete Edwards line you can select a rope that has been "built to specifications" for the job you have to do —built to give you long, productive service with resultant higher efficiency and lower costs.

You can bet your life on

EDWARDS WIRE ROPE

E. H. EDWARDS COMPANY

General Office: SOUTH SAN FRANCISCO, CALIFORNIA • Los Angeles • Houston • Seattle • Portland

DOW
(BEAR BRAND)

XANTHATES

in greater concentration and maximum recovery!

Higher concentrate grade with Dow Xanthates makes flotation of sulphide minerals fast and complete—with every froth bubble loaded to maximum carrying capacity. And the extreme selectivity of these superior collector reagents always assures concentrates of good grade. The result is maximum recovery with minimum operational costs. To learn more about Dow Xanthates and the savings they can effect in your milling operation, write to Dow, Dept. OC 28.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

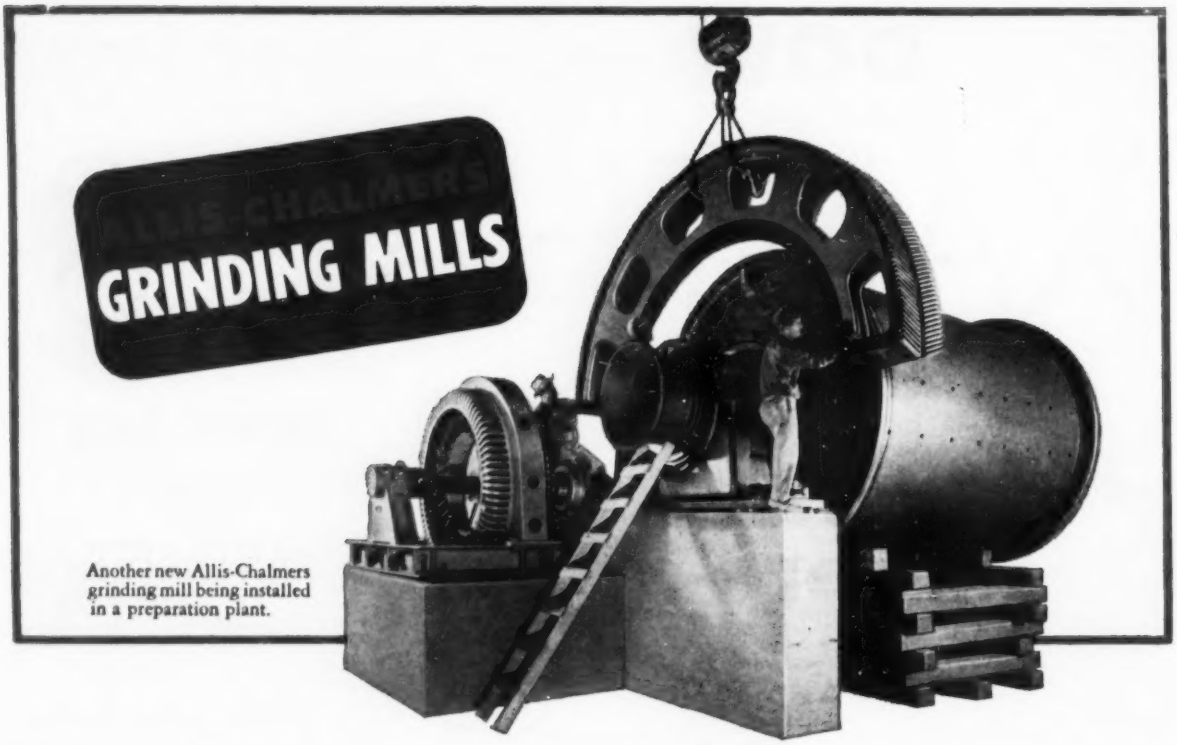
consider these DOW XANTHATES

Z-3 Potassium Ethyl Xanthate
Z-4 Sodium Ethyl Xanthate
Z-5 Potassium sec-Amyl Xanthate
Z-6 Potassium Amyl Xanthate
Z-8 Potassium sec-Butyl Xanthate
Z-9 Potassium Isopropyl Xanthate
Z-11 Sodium Isopropyl Xanthate

For livelier froth— use DOWFROTH 250

To its desirable characteristics of better frothing, better metallurgy and water solubility, Dowfroth 250 adds economy. In actual mill tests, concentrations *as low as one-fourth of normal concentrations* have proved satisfactory! Use this new frother for a froth that's livelier on the machine, quicker breaking in the launders and pump boxes—write to Dow, Dept. OC 28, for your free sample.

DOW
CHEMICALS
INDISPENSABLE TO INDUSTRY AND AGRICULTURE



Another new Allis-Chalmers grinding mill being installed in a preparation plant.

7 out of every 10 *are repeat orders*

OPERATING MEN who have had actual experience with Allis-Chalmers grinding mills will usually specify A-C mills again . . . as proved by our sales records.

Repeat orders, of course, come only from customers who have been well satisfied. That's why we're proud of the fact that 7 out of 10 new Allis-Chalmers grinding mills go to operators for whom we have supplied mills in the past.

Ask the Allis-Chalmers representative in your area about the many high output and low maintenance advantages of Allis-Chalmers grinding mills. Or write for Grinding Mill Bulletin 07B6718A. Allis-Chalmers, Milwaukee 1, Wisconsin. A-3846

DON'T MISS . . .

The Big Allis-Chalmers Exhibit at the Denver Mining Show!

Booths 407-415

Sept. 22 to 25, 1952

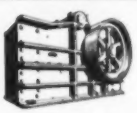
See You in Denver!

ALLIS-CHALMERS

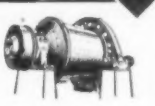
Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.


Hammermills


Vibrating Screens


Jaw Crushers


Gyratory Crushers


Grinding Mills


Kilns, Coolers, Dryers

GRAB SAMPLES From the Mail

111 feet or 102 feet???

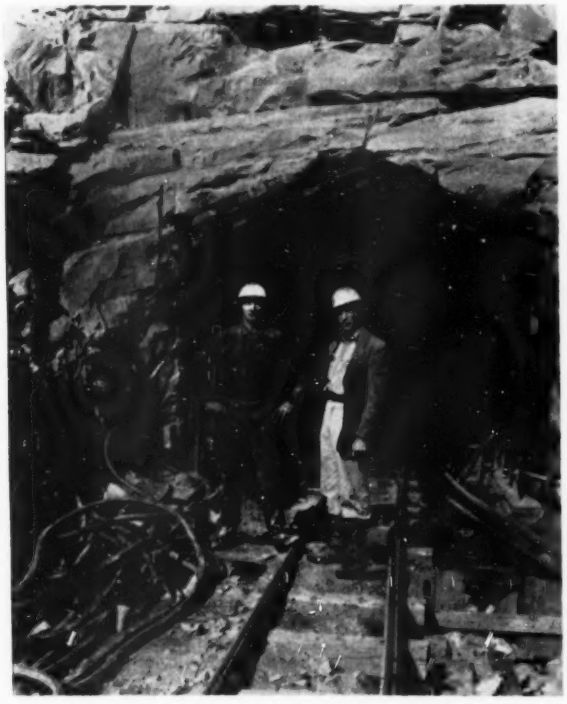
Dear Sir:

Kindly refer to the article "Record Tunneling Through Rock" in the July 1952 issue of *Mining World.*

Tunnel No. 4 was 3,500 feet in length, the first 1,650 feet in the Benton Shales, the remainder in the Dakata, Morrison, Sundance and Lykins sandstone. A third of a second foot of water was encountered in the driving, which water softened the Benton shale and forced us to place tunnel steel supports and total lagging for 85 per cent of tunnel No. 4. The water forced us to take more than ordinary care in the laying and stabilization of our track.

While working in tunnel No. 4, we encountered the Sundance sandstone formation about March 31st and went into rock section. We steadily increased our footage in this formation and on April 10th when Mr. Louis A. Stiles arrived on the job, he was advised by the graveyard shift that they made four shots and according to their measurements had made 37 feet. This information incited Mr. Stiles and the shift, and they endeavored to duplicate or better the graveyard shift's progress. With everything functioning perfectly, at the end of their shift they measured 38 feet of progress. Realizing the possibilities of having a banner day Mr. Stiles stayed over during the swing shift and they were able to make 36 feet during their shift. Everything worked perfectly and only 30 minutes lost time was encountered by the swing shift when the jumbo left the track.

We attribute this banner day to the intelligent cooperation of all of our forces. Our crews were experienced hard



working men, supervised by what we believe the best supervision in the field, our equipment functioned perfectly and everything was excellently coordinated.

Our superintendent, Mr. Louis Stiles, (pictured above at right) deserves the credit for this record and he was ably assisted by Arthur Stiles, walker; (shown at left in pic-

Grab Samples

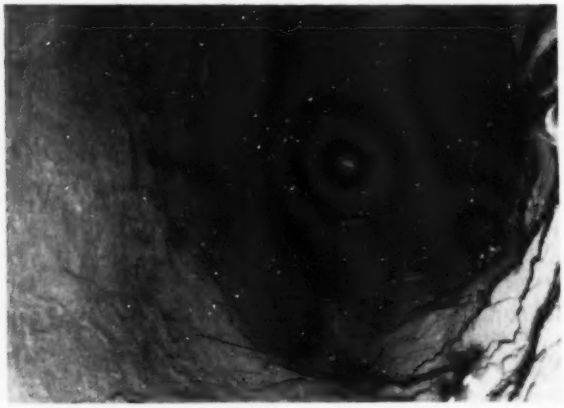
ture) Ray Hooper, Loren Huffman, Clinton O. Ross, shifters; and Howard Cartee, William Coley, and James Doggett, mucking machine operators.

M. Gallup
Treasurer, G. L. Tarlton Contracting Co.

Dear Sir:

Enclosed is a photograph of the tunnel section at station 344+20 (reproduced above) and a copy of a log of Excavation Operations of April 10, 1952, Tunnel No. 4, North Poudre Supply Canal, Colorado-Big Thompson Project.

It will be noted from the log that the tunnel heading was advanced 111 feet in 26 hours and five minutes and is not



considered correct in determining records. It is estimated that the tunnel was advanced 102 feet in the 24-hour period beginning at the time of the shot at 12:02 A.M., station 345+18 to the time of the shot, 11:45 P.M., station 344+16.

Ralph L. Williams
Information Officer
U. S. Bureau of Reclamation

Log of Excavation Operations—April 10, 1952
Tunnel No. 4—North Poudre Supply Canal

Start Drilling	*Shot*	*Heading Station*	*Finished Mucking*	*Remarks*
6:55 P.M.	7:45 P.M.	345+36	8:45 P.M.	
8:55 P.M.	9:50 P.M.	345+27	10:45 P.M.	Heading Station at start of day midnight
11:00 P.M.	12:02 A.M.	345+18	1:00 A.M.	
1:15 A.M.	1:55 A.M.	345+10	3:55 A.M.	
3:15 A.M.	4:10 A.M.	345+02	5:10 A.M.	
5:25 A.M.	6:10 A.M.	344+94	7:00 A.M.	
7:20 A.M.	8:00 A.M.	344+85	9:05 A.M.	
9:25 A.M.	10:15 A.M.	344+76	11:10 A.M.	(April 10, 1952)
11:25 A.M.	12:10 P.M.	344+67	1:05 P.M.	
1:45 P.M.	2:30 P.M.	344+52	3:25 P.M.	
3:35 P.M.	4:10 P.M.	344+52	5:15 P.M.	
5:25 P.M.	6:15 P.M.	344+43	7:15 P.M.	
7:30 P.M.	8:10 P.M.	344+35	9:05 P.M.	
9:15 P.M.	10:00 P.M.	344+26	10:50 P.M.	
11:00 P.M.	11:45 P.M.	344+16	12:50 A.M.	Heading Station at finish of day—midnight
1:10 A.M.	2:05 A.M.	344+09	3:15 A.M.	
3:30 A.M.	4:40 A.M.	344+00	5:50 A.M.	

Belgian Engineers Read English

Dear Sir:

Our opinion of *World Mining* is double. First as consulting engineers, we are pleased with the general world outlook of the magazine as well as all new equipment and its possibilities. Secondly, we consider that it is one of the best advertizing mediums for products like Le Tourneau, Harnischfeger, LeRoi, Eimco, etc. of which we are the exclusive dealers.

Of course, French is the most familiar language for Belgium and the Belgian Congo. However, most of the engineers have sufficient knowledge of English to read and write it and to speak it more or less fluently.

Wishing the best of luck to your interesting magazine.

F. Dierkens
Manager
Matermaco
Brussels, Belgium

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DRIFTS AND CROSSCUTS

Prelude To Ghost Camps

The battle over the report of the President's Materials Policy Commission (more popularly known as the Paley Commission) has been joined.

The "Planners" are the proponents—and they have opened a vigorous campaign in support of their schemes and dreams. Significantly, a new Washington group, representing 25 major departments and agencies of the government, was established by Presidential direction to carry forward the study of the recommendations even before copies of the report were generally available to the mining industry. This new group is to report within 60 days on the means of putting the recommendations into effect.

One of the most discussed phases of the report is a question, "who are the planners." A check of the staff membership listed on page two of Volume I shows a startling paucity of experienced operating personnel—of men who have sought, discovered, financed, developed, and placed in operation the very mines that have made the United States what it is today. However, the 56-man staff concerned with minerals, does contain two members who have been professors, at least three U. S. Geological Survey members, and one U. S. Bureau of Mines (Yearbook) editor. Only one staff member and one Commissioner are members of the Mining and Metallurgical Society of America. Two Commissioners and seven staff members are members of the American Institute of Mining and Metallurgy. Five of the seven were Staff Consultants and three of them only part-time or for a limited period.

It is too early to sample and assay the foreign opinion. As this is being written, one report has been received from England. It was, not surprisingly, favorable.

It is not hard to visualize the warm welcome which will be given to the report by many foreign metal producers—the same producers who are now selling their metal to the United States at higher prices than the government permits its own citizens to charge. The report's scare shortage will be effective ammunition for still higher prices for foreign metals.

The opponents—and their voices are just beginning to be heard—have the opportunity to "have their day in court" through their Congressmen and Senators. For the first time, industry leaders give their views starting on page 61.

The American system now under attack has been successful. Review what the right to discover and own mining claims and operate them without control and regulation has meant to this nation.

A change based on planners' changing world philosophy and out-of-step propaganda can be no improvement—only tighter governmental control under the recommended mineral leasing system.

One has only to visit the new ghost camp of Stibnite, Idaho, where the United States' largest antimony mine has been forced to close because foreign dumping of below-cost antimony has flooded the world market to see what will happen in many other mining camps if the recommendations of the Commission are carried out.

G. O. A., Jr.

COMING CONVENTIONS

September 4 through 16, 1952. Centennial celebration and meeting INTERNATIONAL SOCIETY OF PHOTOGRAMMETRY, Shoreham Hotel, Washington, D. C.

September 8 through 15, 1952. XIX Session INTERNATIONAL GEOLOGIC CONGRESS, Algiers, Algeria.

September 21 through 25, 1952. WESTERN DIVISION, AMC, EXPOSITION, Shirley Savoy Hotel, Denver, Colorado.

September 23 to 25, 1952. Mineral dressing symposium, INSTITUTE OF MINING AND METALLURGY, Royal School of Mines, London, England.

October 20 through 24, 1952. 40th NATIONAL SAFETY CONGRESS AND EXPOSITION, Conrad Hilton Hotel, Chicago, Illinois.

October 20 through 25, 1952. Mining Congress of SOCIETE FRANCAISE DE METALLURGIE, Paris, France.

November 6 to 8, 1952. FIRST ANNUAL SOUTHWEST MINERAL CONFERENCE, sponsored by the New Mexico Mining Association and the Southwest International Mining Association. Alvarado Hotel, Albuquerque, New Mexico.

December 2, 1952. Annual meeting AMERICAN MINING CONGRESS, University Club, New York, New York.

December 5 and 6, 1952. NORTHWEST MINING ASSOCIATION, annual convention, Davenport Hotel, Spokane, Washington.

CAPITOL CONCENTRATES

IS GSA NOW BUYING FOREIGN-MINED COPPER FOR STOCKPILE?

Has GSA resumed copper purchases for the national stockpile, and if so, is it foreign copper that is being bought? These questions are being asked by members of the copper industry.

In July, Defense Production Administrator Henry H. Fowler issued a statement on copper in which he said in part:

"If United States consumers purchase up to the limit allowed us by International Materials Conference, defense programs can be continued unhampered, though only slight increases for civilian copper consumption appear probable in the immediate future. Stockpile deliveries will be revived in the third quarter of 1952."

The words "will be revived" appear to be definite and certain.

Since there is not enough domestic copper to take care of the monthly allocations (only 72,500 tons of domestic copper were allocated for August delivery as compared with 80,000 tons for July), it is taken for granted that if copper is once more being delivered to the stockpile it is not of domestic origin. If it is of foreign origin, then the GSA must be paying the world price of 35.50 cents a pound, f.a.s. Antofagasta, Chile. Information concerning stockpile purchase is regarded as "restricted." Therefore, no one can actually tell whether or not GSA is buying copper for the stockpile.

Domestic producers are justified in taking exception to the government's paying the equivalent of 36.50 cents a pound Connecticut Valley for foreign copper while their price remains frozen at 24.50 cents a pound.

● *Background of Staff Members Is Needed*

The very controversial Paley Report has the listing of the staff of the President's Materials Policy Commission on the fly-leaf of Volume I of this million-word safari into the future. Of the more than 100 staff members whose names are given, less than a dozen were familiar to a mining man whose long connection with the industry includes more than a decade of dealings with government bureaucracy. In no instance is the background or qualifications of any of these key staff members given. Evidently we are supposed to take their pronunciamentos for granted.

Sticking out like a sore thumb is the ubiquitous Samuel Lipkowitz of horrendous memory from WPB days. All this leads up to the thought that it would be a little stupid to take the Paley report at its face value until a short background biographical sketch of each of these staff members is made public. One never knows who may have crawled under the tent. As a matter of fact, the only member of the commission who is publicly well known to the metals industry is Arthur Bunker.

● *Ruling Would Circumvent Law's Intent*

How a government agency can circumvent the will of Congress as written into a law is again illustrated by the proposed action of the Bureau of Internal Revenue with respect to the $75,000 exploration deduction. The law states that this deduction may be taken by any taxpayer. It is understood the bureau may rule that if a company has several corporate subsidiaries only $75,000 in total may be deducted for all. This is a clear breach of congressional intent and another fraud against the mining industry.

● *Development Financing Is Stumbling Block*

Difficulties have developed in the attempts to have DMPA finance development work for properties which either have been certified by DMEA as having made an exploration discovery or which already have been sufficiently explored but need to block out ore before they are eligible for production and expansion loans. A glance at the list of minerals and metals eligible for exploration will reveal that not all of them are considered immediately strategic and in short supply by DMPA. Zinc is a notable example, as DMPA has had no zinc program for some time.

According to reports, DMPA does not consider that it has any obligation to follow up DMEA exploration projects, however successful, with the financing necessary to put the mine into operation. Therefore, unless an operator knows where he can get private capital for development work and to prepare the mine for production, he had better look twice at the situation before he hocks his grandmother's gold teeth in order to match funds with DMEA on an exploration program, believing that DMPA or RFC will finance him into production.

● *Labor Contracts vs. Copper Prices*

For several weeks the copper industry has been negotiating new wage contracts with labor unions without making much progress. The union originally sought a 25-cent-an-hour wage increase plus a long list of fringe benefits. There has been no change in the union demands, and so far as known no mining firm has presented a counter offer.

If the copper industry is forced to grant a wage increase, it undoubtedly will have to ask for price relief. Domestic copper producers for some time have been dissatisfied with the United States ceiling price—particularly since foreign copper producers have been permitted to sell to American industry at any price they can get. United States consumers are paying 36.5 cents a pound for Chilean copper compared with 24.5 cents that the domestic mines are permitted to charge.

The OPS has permitted brass and wire mills to boost their prices to the extent of 80 percent of the 12 cents more they must pay for foreign copper.

● *Committee Will Report on Paley Report*

Now that the Paley commission's report is being displayed (although mostly unread) on almost every Washington desk, a new governmental committee has been appointed under the National Security Resources Board to read it and write a report on it.

One of the most interesting things about this committee is the evidence it gave that the NSRB is still with us and that one Jack Gorrie is chairman thereof. It is amazing how these boards maintain just enough vitality to survive and let out an occasional moan or groan in the form of a press release to let us know they are around. As set up by law, NSRB originally had the concentrated war powers of the government in its hands. Most of them were never used and its position weakened bit by bit

until, like most semi-defunct agencies, it finally went to Steelman, then quietly faded away to its present background position, occupying valuable space in the Executive Offices and apparently accomplishing little. Now, in one of its dying gyrations, it has produced a committee to study the report of a commission which reported on hypothetical economic conditions in the raw materials business in 1975!

● *Zinc Program Still Missing*

To date no sign that a new zinc program will be approved has been seen in or about Washington. A great many applications for floor prices, purchase contracts and loans are held up indefinitely in DMPA. If there is to be no new program it would be kinder to so notify those who are already on the hook and who have spent valuable money and time preparing applications (not to speak of the government's cost in processing them), and to tell the mining public not to waste its time filing additional applications.

● *Time Element Is Vital Factor*

The details and regulations on the General Service Administration program for railhead purchases of manganese ores have been published. Two things may defeat the small operator in trying to take advantage of the program. One is the necessity for accurate sampling and assaying before shipment, and the other is the time element involved before payment.

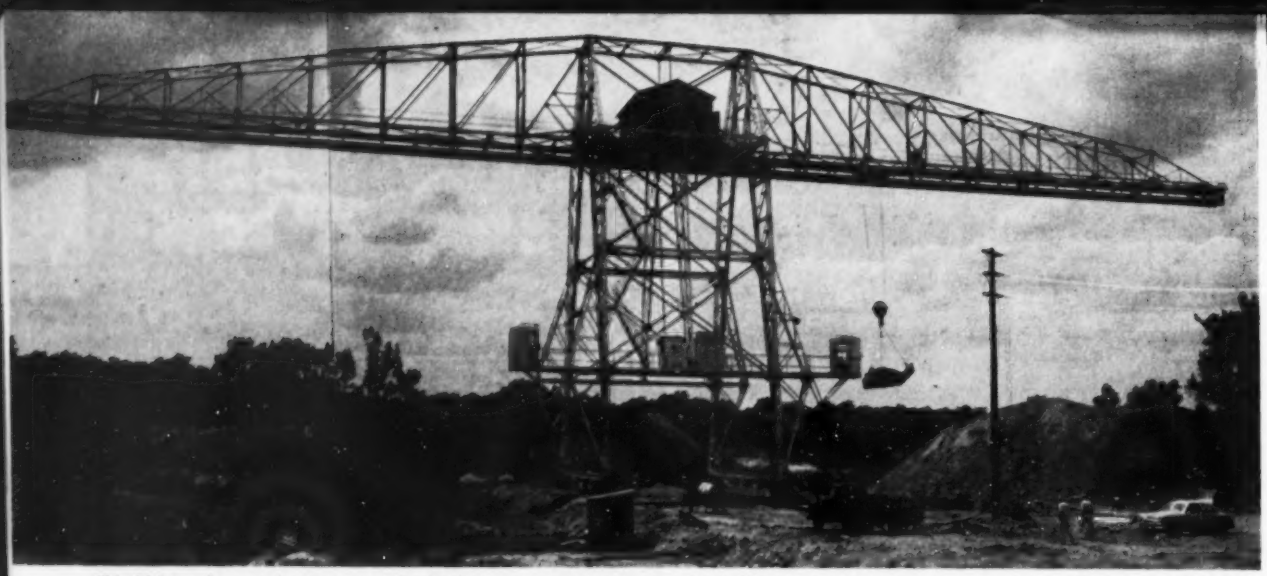
Suppose you mine a carload of manganese which appears to fill the minimum specifications. In some locations it may take two weeks to get a complete analysis of the samples. You must then notify GSA 20 days before you wish to ship, sending along your presumed analysis. Within 15 days GSA will inform the shipper of the "receiving point" to which the lot must be delivered at shipper's expense, and the "consignee" to whom the shipment is to be made. Freight conditions being what they are, another 10 days may be required for rail transportation. The lot then must wait its turn to be weighed, sampled and analyzed at the expense of the government. Upon receipt of the analysis, the government will inform the shipper as to the acceptability of the lot. How long these last two steps will take is anybody's guess, but 10 days would seem to be a fair estimate. Then it takes time to get a government check into the mails. Will a small operator be able to meet his payroll for that long a period?

● *Another Over-Ceiling Copper Contract*

DMPA Administrator Jess Larson has announced another over-ceiling contract covering production of nearly 9,000,000 pounds of electrolytically refined copper from ores that cannot be mined economically under present ceiling prices and under present wage scales and other rising costs. The contract calls for a year's assisted operation of the Howe Sound Company's Holden mine in Chelan County, Washington.

The new agreement is the sixth of its kind thus far negotiated by DMPA, and is in line with Larson's policy statement of last December in which he announced that, where necessary, the government would grant over-ceiling subsidies in order to assure continued supply of needed copper. All such subsidy agreements may be cancelled by either party on 60 days' written notice and terminate automatically in the event price ceilings on copper are removed by the government.

If you are to judge by the action,—or lack of it—the policy seems to be aimed only towards the maintenance of present production rather than any effort to get increased production by means of over-ceiling contracts.



This 225-ton, hammer-head crane at the Quick Seven zinc-lead mine near Neck City, Missouri, pioneers a new method of open-pit mining. With an overall reach of 300 feet and an unlimited hoisting depth, the crane's outboard arm (left) extends far out over the pit. The loaded skip may be seen below the inboard arm on the way to the stockpile.

A NEW METHOD OF OPEN PITTING

The 300-foot-long-armed, hammer-head crane at American Zinc-Brown & Root's Quick Seven zinc mine is a new tool for small, deep, vertically walled pits

A "quick seven" has always been the way to a quick and easy financial return in a dice game. To the zinc miners in the Tri-State district in the early part of this century, a "quick seven" was the way to shoot craps, but a better way to get rich was to have an interest in the Quick Seven mine. For at this mine, the ore was so high grade that the mill had to be shut down at frequent intervals to shovel zinc concentrate out of the jigs so that the mill could resume treatment of ore in the normal manner.

Today, the Quick Seven mine on the north bank of the North Fork of Spring River, two miles northwest of Neck City, Jasper County, Missouri, is once again foremost in the minds and talk of Missouri miners. However, Brown and Root, Inc. of Houston, Texas, and the American Zinc, Lead and Smelting Company of St. Louis, Missouri, as joint venturers, are doing it the "hard way" at the Quick Seven—the open-pit mining of 1,400,000 tons of 1.42 percent zinc ore over a three-year period to recover 36,000 tons of 60 percent zinc concentrate.

Former Operations

The Quick Seven was operated continuously as a "soft ground" underground mine from 1908 to 1915 by the Quick Seven Mining Company. Mining was largely by a "pull hole," modified caving system. U. S. Bureau of Mines records show that 806,861 tons of ore were mined and treated in the five local mills through 1918. Only a small tonnage has been mined since that time.

From 1913 to 1918, some ore was mined by surface methods, and, in 1920, a Sauerman scraper excavation system was used for pit mining. In 1947, Clarence Playter of Joplin leased the mine and drilled nine prospect holes before subleasing to the McNabb Coal Company, which mined a small tonnage with a dragline and shovel. Difficulties in finding a market or mill to treat the shale ore were not successfully overcome.

In 1948, from June to October, F. W. Evans, Joplin mine owner and operator, drilled some prospect churn drill holes. Subsequently, Brown and Root acquired the leases, and have been in continuous possession since that time. They started churn drilling in 1951, and shortly afterwards interested American Zinc in a joint venture, with Brown and Root doing the stripping and mining, and American Zinc handling the crushing, washing, milling, and marketing of concentrates.

The joint staff, headed by American Zinc's Tri-State Manager, John J. Inman; Dan R. Stewart, geologist; Jack Gilbert, superintendent; and Pope Schoenberger, Brown and Root's construction specialist, have done the following to get the Quick Seven back into production:

CHURN DRILLING—Some 130 holes were drilled to an average depth of 75 feet. The maximum was 200 feet.

ELECTRIC POWER—Built 2.5 miles of three-phase power line.

LEVEE—Enlarged and heightened 1.0 mile of levee surrounding the open pit. The North Fork River rises in the spring and has flooded the open pit in the past.

PUMPING—Over 5,000,000 gallons of water have been pumped out of the pit. A six-inch, deepwell-type electric pump, placed in one of the old vertical shafts on the north rim of the pit, has lowered the water well below mining operation to make a dry pit.

ROAD—One-half mile of road has been graded and surfaced between the open pit and the mill site which is well above flood level.

HAMMER-HEAD CRANE—A 224-ton hammer-head crane with a 300-foot reach was moved from the Bull Shoals Dam on the White

River, Arkansas, to the north rim of the pit and re-erected.

WATER SUPPLY—A pumping plant has been built on the river bank and a pipe line laid ¾ths of a mile to the mill. The river level fluctuates 30 feet, so a deep well pump was placed near the top of a tree above the high-water mark, with the intake column dropping into the river well below the low-water level.

DRAGLINE—A 6½-cubic-yard, Bucyrus-Erie, walking dragline owned by Brown and Root and used by them for levee construction was dismantled, moved to the pit, and re-erected on the pit's south bank. It is used for cleaning waste out of the pit.

PIT SHOVEL—A 1½-yard, 38B-Bucyrus-Erie Diesel shovel was lowered into the pit for loading ore and waste into dump trucks.

WASHING PLANT—A 6 by 31 foot gold dredge trommel screen was purchased in Sacramento, California, moved to the mine, and placed in position adjacent to the hammerhead crane to receive the crusher discharge.

MILL BUILDING—A fabricated steel pyrite-washing mill building was purchased from the Pittsburg Midway Coal Company at West Mineral, Kansas, dismantled, moved to the mill site, and re-erected.

INSTALL MILL MACHINERY—Equipment for the 50-ton-per-hour jig and flotation mill has been installed inside the steel framed mill building.

TAILINGS PONDS—Separate jig and flotation tailings ponds have been built on the west side of the mill. Pond areas total 15 acres with clear water return canals ½-mile long leading to the mill pump plant. Make-up mill water is pumped from the river to the canals.

STRIPPING—The 6½-yard dragline with a 130-foot boom has been used for stripping 6,000 yards of waste per day out of the south section of the pit, some of which has been cast as many as five times. A bulldozer within the pit, trucks, and, on occasion, the 1½-yard shovel have moved waste within range of the bucket.

Small, Round, Deep Pit

The early mining and recent test drilling has delimited the Quick Seven orebody to a circular sink hole area 500 feet in diameter with a maximum depth of 185 feet. It has nearly vertical walls of limestone and chert. Within the orebody is a large unmineralized core of Pennsylvania shale. Nowhere is the mineralization uniform and consistent, and several blanket-like masses of unmineralized shale are surrounded by ore. A similar, but smaller, orebody known as the Little Francis is a few hundred feet to the north.

Knowing the size, shape, grade, and attitude of the orebody, it was immediately apparent to the engineers and geologists that a lowcost, mass-production system of mining using large-capacity surface equipment was necessary. Mining the ore and waste would create no problem other than their close separation. However, a major problem developed as to the best method of elevating the ore out of the narrow confines of the deep pit. After a detailed study, the following systems were considered and eliminated for the following reasons:

TRUCKS—A large amount of ore would be tied up in road benches and grades would be excessively steep. Ore and waste could be easily handled separately, however.

CONVEYOR BELT—Due to the steep walls, a long waste cut would have had to be made to bring the

The giant 6½-cubic-yard walking dragline with a 130-foot boom on the south rim of the Quick Seven open pit dwarfs the 1½-cubic-yard loading shovel on the pit's bottom. Two geologists, checking the bank of the pit under the dragline, appear as more spots from the pit's north rim.

Another 10-ton skip load of ore is hoisted out of the pit by the hammer-head crane. Note the bulldozer cleaning up around the 1½-cubic-yard shovel.

belt out of the bottom of the pit on a satisfactory grade.

SIDE HILL SKIPS—Vertical walls meant a pillar of ore left to support the inclined track within the pit or a waste cut would have had to be made in the wall.

Why Not Hammer-Head Crane?

Brown and Root engineers knew that one of their hammer-head cranes had finished its job of placing concrete in the Bull Shoals Dam in Arkansas. Its long arm would extend well out over the pit, and it could hoist as efficiently from a depth of 100 feet as from 185. It could move back and forth parallel to the bank at the top of the bank, and its skip lowering point could be anywhere along the outboard arm. This would mean that a 10-ton skip could be spotted close to the bank or far out toward the pit's center to meet changing loading conditions.

Another factor in its favor was that the only preliminary work required would be the laying of two 100-pound railroad rails 38 feet apart on top of the pit's bank along which the crane would travel. (There would, of course, be no danger of damaging the crane from blasting in the pit.) Also, the loaded skip could be dumped directly into the crusher feed pan close to the crane's supporting legs, or carried far out on the inboard arm and dumped in a stockpile.

Only one operator is needed for the crane, although there are two control rooms. The operator looks down into the pit and operates the entire crane from one room; he then moves to the other for a better view when he picks up stockpiled ore.

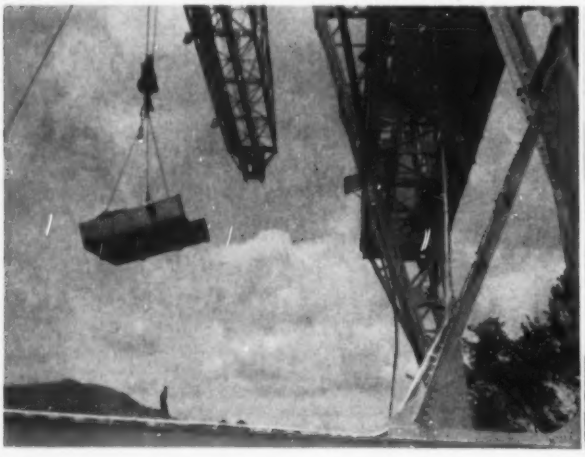
By using two (or more) skips, one is being loaded in the pit while another is being hoisted and dumped. The skips hold 10 tons of ore and are 10 by 12 feet in base section and three feet high on the two sides and back. A dump truck backs through the open front end and dumps its load. When mining reaches the planned 2,000-tons per eight-hour shift, bulldozers will also be used to load the skips. It is much faster and cheaper to bulldoze the broken ore 75 to 125 feet along the pit bottom than to truck it. The trucks and 1½-yard shovel will be used in the pit farthest from the crane.

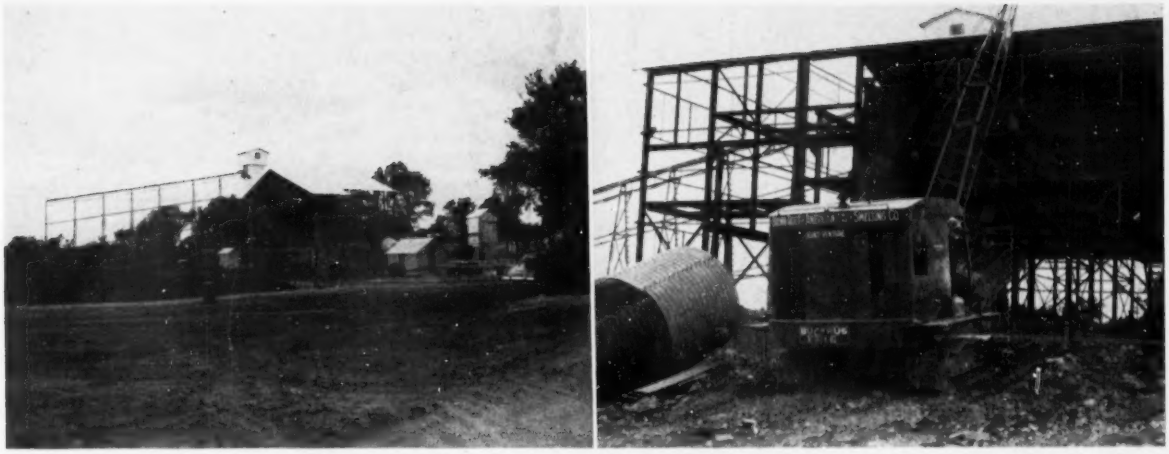
Crushing and Washing Plant

Crushing of the ore that occurs in the Pennsylvania shale mined from sink holes north of Joplin has created a problem in the past at other mills. The shale is soft and upon exposure to water disintegrates into a gummy, sticky mass. In fact, local terms used to describe it are "soup ore" and "soapstone." In addition to the shale ore at the Quick Seven, a large tonnage of highly siliceous, hard and abrasive chert, and cherty limestone will be mined. Faced with these two extremes in the nature of the ore to be crushed, American Zinc's engineering staff decided to use a 30 by 30 inch Cedar Rapids (New Holland) hammer mill for crushing. It has a high capacity and will handle large-size feed, breaking the major portion to a minus-5-inch size.

The skip will dump directly onto a large pan conveyor which will regulate the rate of feed into the crusher. Crusher undersize falls onto a rubber conveyor belt which feeds the dredge trommel screen. A 10-foot-long section at the feed end of the screen is fitted with lifter bars

LEFT The skip is moved away from the pit along the outboard arm. The man on top of the stockpile gives a size comparison. RIGHT: Ore dumps free of the 10- by 12-foot skip on top of the stockpile.





LEFT: The 50-ton-per-hour jig and flotation mill under construction on high ground north of the open pit. Tailings will be discharged through the launders at left. Clear tailing water flows through the return water canal to the pump house at right. RIGHT: Leveling the mill stockpile area. The stockpile conveyor is built within the six-foot-diameter corrugated pipe at the left. Note the structural details of the steel framed mill.

to mix and break up the ore. High-pressure water sprays inside the screen wash and breaks up the shale ore. Trommel undersize, minus-3-inch, drops into a settling tank and the oversize drops onto a picking belt from which waste is picked off by hand. A dewatering drag-conveyor elevates the undersize to a 100-ton ore bin into which the coarse ore is also elevated by belt.

High and Dry Mill

The ore is trucked one-half mile to the mill site built above the flood water's high point, and dumped into a belt conveyor loading hopper. The conveyor elevates the ore to the top of a 3,500-ton stockpile. Ore is reclaimed by a belt conveyor extending under the stockpile and fed by any of three vibrating feeders. Uniform grade can be maintained from the stockpile by varying the amount drawn by any of the feeders.

Inside the mill a set of 51-inch rolls in closed circuit with a 6 by 8 foot trommel screen reduces the ore to minus-$\frac{5}{8}$-inch in size.

Harz jigs, 42 by 48 inches, and tables make rougher and cleaner concentrates which are ground in a 6 by 6 foot Traylor ball mill in closed circuit with a Wemco 36-inch spiral classifier. Jig and table tailings are elevated to the top of the mill and laundered to the jig tailing pond. Classifier overflow, minus-65-mesh, goes to flotation. Lead is floated first in a four-cell Denver Equipment "Sub-A" unit. The lead tailing is conditioned in a Denver conditioner and the zinc is then floated in two six-cell "Sub-A'" machines.

Because of the iron (pyrite and marcasite) content of the shale ore, the jig concentrate is too high in iron to be marketable, so the iron is depressed during flotation and forms a large percentage of the flotation tailing.

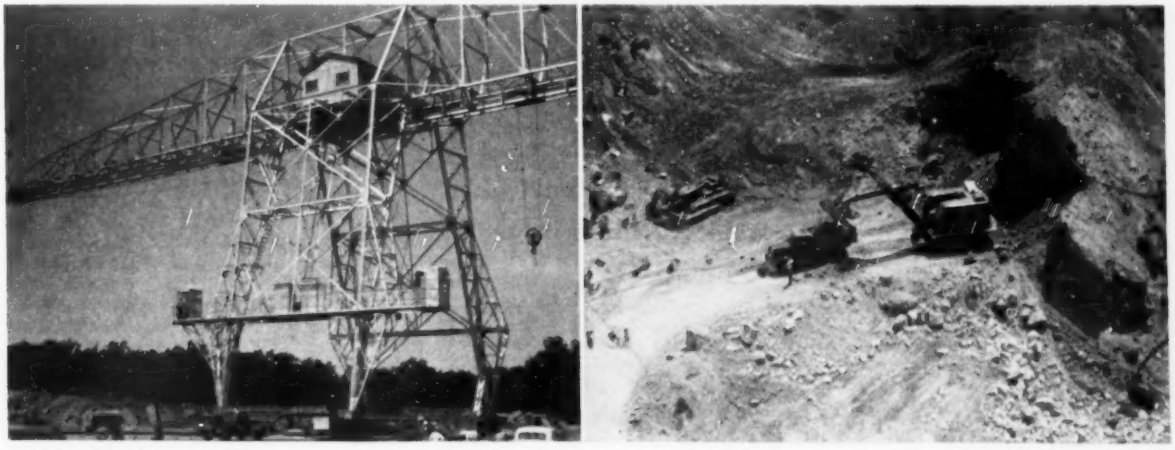
Lead and zinc concentrates are dewatered in a 60-foot thickener, filtered, and trucked to the railroad for shipment to East St. Louis zinc smelters.

Future Operations

When mining has reached the full production stage, the 6½-cubic yard dragline will be moved to the adjoining Little Francis mine for stripping the 900,000 yards of overburden. There is no pit there now, only underground workings. When the Quick Seven has been mined out, the track will be extended and the hammer-head crane moved by its own power to the south rim of the Little Francis pit to hoist ore from the new pit.

Mining men everywhere are watching the Quick Seven operation with great interest. The heavy construction industry has supplied another tool to the science of open-pit mining.

LEFT: The 131-foot-long outboard arm of the 225-ton, hammer-head crane extends well out over the open pit. The two farthest legs of the crane are within a few feet of the pit's vertical north bank. RIGHT: Loading ore into a 10-ton truck which transports it to and dumps into the 10-ton skip on the pit's bottom.



Overall air view of potash refinery.

America's most modern POTASH REFINERY

Remote site requires unusual self sufficiency... including office laboratory, repair shops, etc. Entire project was work of Stearns-Roger Mfg. Co.

This new potash plant has a rated capacity of 2400 tons of feed per 24 hours. It employs efficient methods and equipment which promise noteworthy increase in output per man hour. Full operation began in March of this year, and the first two months of operation completely bore out the capacity rating estimated by the Stearns-Roger engineers who designed the refinery, in accordance with a metallurgical flow sheet supplied by the customer.

There are two main shafts, both served by a common hoist house which also serves as main electric distribution center. Voltage of 4160 is broken down to 440 at a number of substations about the plant. A temporary head frame was used to sink the main ore shaft. If this had been dismantled prior to erection of the permanent head frame, a serious loss of time would have resulted. Stearns-Roger's solution was to build the 130-foot main head frame 80 feet from its permanent site and move it bodily into place when finished. This saved over a month's time in getting the plant into operation.

INTERNATIONAL PANORAMA

SAN FRANCISCO—The New Idria Mining and Chemical Company has received a $243,349 DMEA loan for exploration at its New Idria mercury mine. The mine was the largest United States mercury producer during World War II. Loan funds will be used to drive nearly 6,000 feet of drifts.

SANTIAGO—Production of copper from the Chuquicamata copper mine of the Chile Exploration Company is expected to reach 160,000 tons in 1952.

KINGSTON, JAMAICA—The Secretary of State for the Colony has approved the first iron ore export permit—5,000 tons to Germany.

LONDON—The Dead Sea Works, Ltd., an Israeli government-controlled corporation, has bought the British-owned firm, Palestine Potash Ltd. The firm operates potash plants at the south end of the Dead Sea.

BARTOW, FLORIDA—The Davison Chemical Corporation has started construction of a triple superphosphate plant near here. Completion is scheduled for October 1, 1953.

WASHINGTON—The International Materials Conference has announced that scarce supplies of nickel and cobalt will have to be allocated to 28 member nations for an indefinite time.

PHOENIX—The San Manuel Copper Company has received a loan of $94,000,000 from the Reconstruction Finance Corporation to develop and equip its San Manuel mine to produce 140,000,000 pounds of copper and 6,000,000 pounds of molybdenum annually. The loan is the largest ever granted by RFC.

SALT LAKE CITY—The Garfield Chemical & Manufacturing Company (jointly owned by Kennecott Copper Corporation and American Smelting and Refining Company) and the Stauffer Chemical Company will build and operate a phosphate fertilizer plant here. Phosphate rock from Idaho and Wyoming and byproduct copper smelter sulphuric acid will be used.

KUALA LUMPUR—Production of Chinese tin mines in Malaya in 1952 was 19,208 tons. The production in 1951 was 21,181 tons.

RIO DE JANEIRO—The Brazilian National Department of Mineral Production has removed the export restriction on beryl. It has authorized exports of 4,000 tons of ore or an equivalent quantity of manufactured product, on an emergency basis, until the first of 1953.

WASHINGTON—During the first year of its existence, the Defense Minerals Exploration Administration has granted 349 loans. The leading metals for loans were: lead, tungsten, mica, copper, uranium, and zinc.

MAJDANPEK, YUGOSLAVIA—Plans are being drawn for the construction of a flotation plant to treat copper ores from the mine being developed here. Ore reserves have been estimated at 100,000,000 tons averaging 0.9 percent copper. The plant is scheduled to be in operation early in 1956.

NEWFOUNDLAND—St. Lawrence Fluorspar Incorporated is to build an HMS plant at its mine here and a flotation plant at Wilmington, Delaware, to produce 150,000 short tons of acid-grade concentrate in the next four years. The $1,250,000 expansion is to be financed under a contract with the DMPA.

WASHINGTON—The Defense Production Administration has set a production goal of 1,500 short tons of 62 percent columbite-tantalite concentrates by 1954.

GRANTS PASS, OREGON—Sixty four Oregon and California chrome miners have made shipment to the government stockpile here since the first of the year.

LONDON—The British Colonial governments have announced that gold for Free Market sales need no longer be exported in processed or semi-processed form.

EDGE MOOR, DELAWARE—The Du Pont Company has signed a contract with DMPA for production of 13,500 short tons of titanium sponge during the next five years. The government in advancing up to $14,700,000 to cover plant expansion costs.

HOUGHTON, MICHIGAN—The Calumet & Hecla Consolidated Copper Company will unwater and reequip its Osceola mines at a cost of $6,000,000. About 7,000,000,000 gallons of water will have to be pumped an average distance of 1,600 feet. The DMPA has granted a floor-price of 25.25 cents per pound for 53,000 short tons of copper to be produced from the mines in the next 10 years.

TEXAS CITY, TEXAS—The National Production Authority now permits importers to buy foreign-produced tin in any quantity at any price. The RFC, since March 1951, had been the sole buyer of tin for import. Domestic tin users must continue to get NPA allocations before they can accept delivery and use the tin.

JOHANNESBURG—The average premium received by South African gold producers for the year ended March 31, 1952 was 24.8s ($3.47) per ounce according to the South African Reserve Bank.

KUALA LUMPUR—Communist guerrillas have damaged the Pacific Tin Consolidated Corporation's tin dredge in the Kinta Valley near Kota Bahru, Perak.

NEW YORK—Production of aluminum in the United States during the first six months of 1952 was at an all-time high of 923,072,606 pounds, 17 percent greater than in 1943 the top production year of World War II.

RIO DE JANEIRO—A major gold rush is under way to the northern section of Brazil just south of the Surinam frontier. The area is deep in the jungle and one of the most isolated parts of the world.

NEW YORK—Imports of foreign-mined lead into the United States in May were the largest for any month: a total of 71,076 tons compared to 40,785 in April and 17,334 tons in May 1951.

Kennecott Expert Checks Australian Uranium Find

The Australian Commonwealth Bureau of Mineral Resources has given assistance to L. S. Breckon, a United States geologist stationed in Australia by the Kennecott Copper Corporation, in his examination of the recently discovered Rum Jungle uranium deposits. They are just outside Darwin in the Northern Territory.

The uranium, pitchblende, associated with copper minerals in slate, has attracted world-wide attention since a prospector going over old dumps with a Geiger counter detected radioactivity. Kennecott is reportedly interested in perfecting a process to recover both the uranium and copper in the ore.

Australian Prime Minister Menzies has said that the Rum Jungle deposit has great possibilities and will mean much to Australia. He said, "I think we will have a great industry. It will be a means of developing parts of Australia which are undeveloped at present."

Homestake Geologists Find Uranium Ore in Wyoming

The Homestake Mining Company has announced initial success in its search for uranium ore on the flanks of the Black Hills. High-grade carnotite ore in sandstone has been found in small quantities by company geologists in Crook County, Wyoming, about 40 miles northwest of the Homestake gold mine.

Homestake has filed mining claim locations at the Crook County courthouse at Sundance and has leased an 80-acre tract of government land, according to Guy N. Bjorge, vice president and general manager. Initial work consists of road building.

St. Lawrence Fluorspar Gets DMEA Contract

St. Lawrence Fluorspar, Inc. will increase its production of acid-grade fluorspar by 50,000 tons a year as a result of an agreement made recently with the Defense Materials Procurement Agency. The government has agreed to advance St. Lawrence Fluorspar up to $1,250,000 to get the expansion underway. The contract extends over a period of four years, or until 150,000 short tons of acid-grade concentrate has been produced.

The company will make extensive improvements and additions at its plant at Wilmington, Delaware, and at the properties of its affiliated concern, the St. Lawrence Corporation of Newfoundland. To be constructed are a sink and float plant at the Newfoundland site and a flotation mill in Wilmington. Ore will be mined and HMS concentrate produced at the Newfoundland facilities, with these concentrates then being converted into acid-grade concentrates at the Delaware flotation plant.

This self-propelled, crawler-mounted, electrically powered drill weighs 25 tons. It travels from hole to hole at speeds up to five miles an hour. It uses three electric motors—a 125 hp. to drive the 550-cubic-foot-per-minute compressor, a 50-hp. motor to power the rotary table and a five-hp. motor for the dust collector which can be seen on the near side of the drill.

ROTARY BLAST HOLE DRILLING NOW FEASIBLE IN IGNEOUS ROCK

Rotary Drill

A new tool—the rotary blast hole drill—has come of age. After only two years of successful pioneering the Joy 58-BH Champion blast hole drill has been proven to be a superior, large-diameter hole maker in several types of igneous rocks at comparative costs.

Initially, the drill had been used only for softer rocks, such as limestone, shale, magnesite, dolomite, and mudstone. A large share of the successful drilling of harder rock by this drill is due to the Hughes Tool Company, Houston, Texas, whose engineers have steadily improved their bits to drill harder and harder rock at faster speeds. These bits are an adaption of oil well bits; are specially hardened with directional air jets to cool the bit and bit bearings. A 7⅜-inch-diameter hole is the largest drilled to date.

Rotary drilling has been used for oil well drilling for many years. However, the air-blast cleaning of the hole is a relatively new development. All drilling is dry, with a continuous blast of compressed air forced through the drill stem to blow the cuttings away from the bit instantaneously and out of the hole at 3,000-foot-per-minute velocity. A cyclone collector at the collar of the hole retains the cuttings.

Operating Results

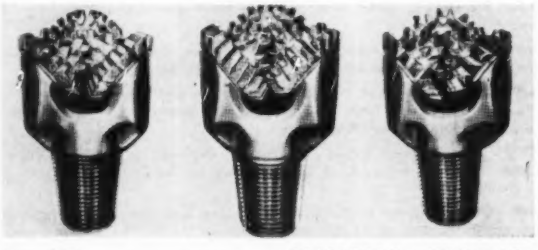
The Utah Construction Company has six of these drills in operation and on order for its open-pit iron ore mines west of Cedar City, Utah. All blast holes are now drilled with the machines, the first one being placed in operation in April 1951. The machines are operated three shifts per day with a crew of two men per shift. The machines have replaced 12 wagon drills. Each drill averages 400 feet of 7⅜-inch-diameter hole in limestone per eight-hour shift. Up to 600 feet has been drilled in soft iron ore per shift. Benches are 25 to 35 feet in height, and the holes are spaced 12 to 25 feet apart. Rotary drilling and more effective hole spacing has reduced powder consumption from 0.5 pound per cubic yard broken to 0.4. On a stripping job for the Geneva Steel Company, the Utah Construction Company has operated one drill for over 18 months. During this time, over 2,500,000 cubic yards of overburden was removed. The 7⅜-inch-diameter holes are spaced on 22-foot centers.

The Columbia Iron Mining Company mines ore for the Geneva Steel Company and uses a rotary drill. Very hard iron ore (65 percent Fe) has been drilled at the rate of 18 feet per hour. A nine-inch churn drill penetrated the ore at a lower footage per shift. Roller bit life in the hard ore was less than 100 feet, however.

Porphyry Overburdened

Porphyry and quartzite overburden has been successfully drilled at two open-pit copper mines in the western United States by two stripping contractors.

At one Arizona mine, from March 15 to May 15, 1952 a rotary drill averaged 216.5 feet of 7⅜-inch di-



Tri-cone, roller-type bits are used with the rotary drill. Various tooth designs are used for different types of rock. The three cones rotate against the bottom of the hole with correctly designed teeth taking a small bite in hard rock or chipping out larger pieces in softer rocks.

ameter hole per shift. Total rotary footage drilled during the period was 11,695. A 29T churn drill averaged 69.5 feet of nine-inch-diameter hole per shift at the same mine. Total churn drilling was 18,835 feet. The rotary holes were on an 18-foot pattern—closer than the churn drill pattern.

Initial blasting experience and more data is needed to give a true picture for hole pattern and blasting costs. Results to date indicate 100 pounds of powder can be loaded in two to three feet of churn drill hole and 100 pounds per six or seven feet of rotary hole.

Roller bit life was 2,500 feet of hole at a bit cost of only 5.4 cents per foot. The contractor figured an important saving for the rotary hole as there was no water cost, an important item in the arid region. Another saving was the cost of stemming material.

At Sage, Wyoming, the San Francisco Chemical Company has successfully drilled hard black cherty limestone at the rate of 30 to 35 feet per hour. The bit life is high; over 470 feet of hole was drilled with the first bit. In the same formation, a nine-inch churn drill's penetration rate was only two feet per hour.

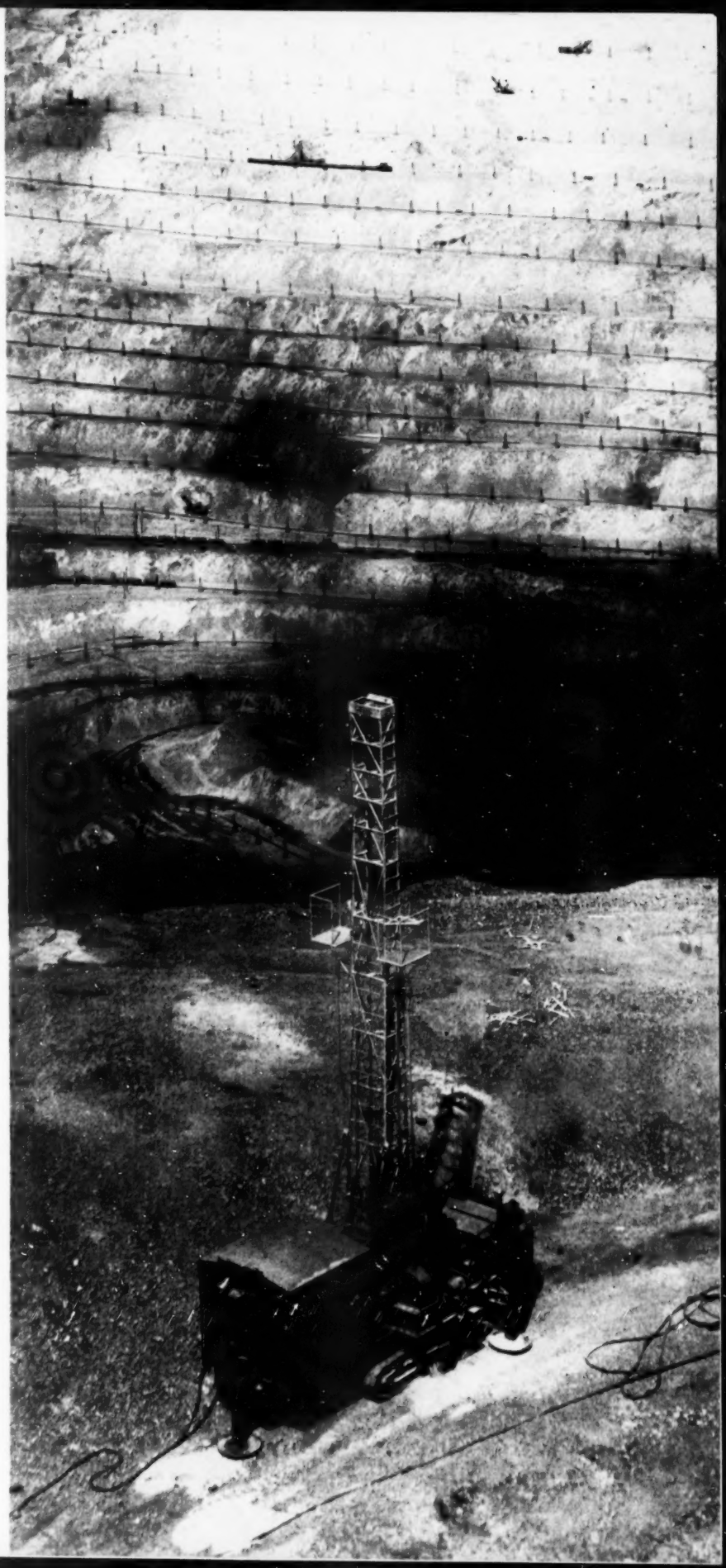
Rotary Savings Cited

Many of the operators who have used both the rotary drill and others are pleased with the rotary. A 75 percent saving in manpower costs has been achieved. It is easier to supply bits for a rotary drill than for a churn drill. There is no freezing of drilling water during cold weather. Usually no collar casing is needed. A straight, smooth, easily loaded hole is made by the rotary drill. Cuttings collected at the top of the hole by a dust collector can be easily assayed for a check on exploration drilling.

Not for Every Rock

While the successful application of the rotary drill is constantly being expanded, largely due to the development of improved bits, there is a limit to the use of a rotary drill. The physical structure of the ground is important. A hard silicious rock may be economically drilled only if it has been fractured or broken.

Rotary drilling is here to stay—and wider use waits only for the metallurgist to develop better alloy steels for the rotary bits.



A Joy Heavyweight Champion 58-BH rotary air blast drill drilling overburden at a western open-pit copper mine.

COLUMBIUM — RAREST JET METAL

Nigerian & Belgian Congo Miners Are Increasing Production of Key Alloying Metal Which Imparts High Strength At Elevated Temperatures in Jet Engines

By Frank H. Cothay
Engineer Consultant,
London Tin Corporation, Ltd.
London, England
and
Metallurgical Staff
Electro Metallurgical Company
New York, New York

The jet fighters patrolling MIG alley in the Korean War owe their flashing speed to one of the world's most sought-after minerals —columbite.

Columbite is the key alloy used in making gas turbines which are the primary power plants for jet aircraft engines and other forms of transportation. So rare are commercial occurrences of columbite that no mine can be considered as a columbium mine. Production comes solely from mines operated for some other mineral, usually tin stone (cassiterite) SnO_2.

Columbium is also known as niobium. While columbium is the usual name in the United States, niobium is most frequently used in Europe and in English technical literature; the ore which is the only commercial source of columbium at present, however, is universally known as columbite.

Columbite is described as a columbate and tantalate of iron and manganese; it is one end member of an isomorphous series (Fe Mn) $(CbTa)_2O_6$, of which tantalite (the principal ore of tantalum) is the other. Neither occurs in nature without some proportion of the other, and the mineral is called columbite or tantalite according to which element is in considerable preponderance. If the proportions are not much different, the mineral is called a columbotantalite. Columbite with a low proportion of tantalum is a more common mineral than any other of the series and is the one desired for the uses mentioned. The tantalum is usually paid for at the same rate as for columbium.

Nigerian Deposits

In Nigeria, columbite is usually found in alluvial deposits in conjunction with tinstone (SnO_2) derived by weathering of recent granites and earlier pegmatites. It occurs in proportions up to 4.0 percent of the amount of tinstone, though in one or two deposits it has reached 50 percent. It has, however, been found to be widely disseminated in biotitic granites, as a primary accessory constituent, in amounts as high as 0.02 percent. It has been recovered, in sample quantities, from the decomposed granite bedrock underlying some alluvial tinstone deposits, but the columbite content so far observed is far below that required for profitable working at its present price.

As the tinstone normally is of greatest value in recovered concentrate, the deposits are worked as alluvial tin mines by dredging or hydraulicking, or by mechanical excavators such as draglines or scrapers according to the character of ground and depth of barren overburden. The value-bearing alluvium, averaging only 0.88 pounds of SnO_2 per cubic yard in 1949, is treated by jigs or sluices; the resulting concentrate is taken to mills for further treatment. The columbite does not become apparent until the sized and washed concentrate is treated by magnetic separators to remove its magnetic constituents. These are magnetite (Fe_3O_4), ilmenite ($FeOTiO_2$), columbite with some monazite, and, in some deposits, magnetic tinstone.

Electrostatic & Air Separation

To obtain a high-grade tin concentrate from a first treatment, the material is passed through a high intensity separator. The magnetic fraction first removed is retreated with different intensities to separate various minerals of different permeabilities. Magnetite can be taken off separately in the first treatment. Ilmenite is removed in the retreatment, leaving a mixture of magnetic tinstone, columbite, and monazite as a feebly magnetic remainder. Magnetic tinstone is not uncommon and causes considerable trouble. Separation of magnetic tinstone from the columbite is commonly effected on air flotation tables, while

columbite and monazite can be separated electrostatically.

L. H. Lange, vice president and manager metallurgical division of the Galigher Company, Salt Lake City, Utah, recently made an extensive visit to Nigeria to study metallurgical practices there, and to recommend possible methods for increasing the recovery of columbite from the tin mining operations.

Research Leads To Uses

The first trial shipment of columbite was sent from Nigeria to the Electro Metallurgical Company at Niagara Falls, New York in 1924. Other small shipments followed.

The company did a vast amount of laboratory research toward solving the problem of intergranular corrosion of the austenitic chromium-nickel stainless steels, and the solution of this problem was found through columbium additions. This work was carried still further by Electromet's laboratories to discover: how to add the metal to steel in the form of a suitable alloy; how much to add; and how to roll, heat-treat, weld, and fabricate the "stabilized' steel into useful articles.

By 1940, increased demand led to the intensive reworking of the accumulated magnetic dumps in Nigeria for its extraction while search was made for the mineral throughout the tin fields in Nigeria and in other countries. This search has recently uncovered other promising areas in addition to the Belgian Congo, which is also an alluvial tin-producing country. Owing to depletion of the dumps, the output of columbite in Nigeria has fallen from more than 2,000 tons in 1944 to 1,092 in 1951, but will possibly increase again in response to the intensive search now being made for the mineral. In the Belgian Congo, the output of concentrate increased from 289 tons in 1944 to 1,219 tons in 1950. The columbite in the Congo however, is reported to average only 52 percent Cb_2O_5 against Nigeria's 63 percent.

The total amount of ore described as columbite and as 'tantalite & columbite' produced from 1932 to the end of 1950 was probably around 18,500 long tons. Nigeria produced 14,000 tons out of that total, and Belgian Congo 4,250 tons, thus being easily the principal producers.

The United States' Defense Production Administration has announced a new expansion goal of columbite-tantalite. The goal for combined supplies of ores and concentrates of both minerals is 1,500 tons assaying 62 percent ($Cb_2O_5 + Ta_2O_5$) annually by 1954.

Concentrate Specifications

Nigerian columbite assays 60 to 68 percent Cb_2O_5 and 10 to 5 percent Ta_2O_5 reaching 73 percent combined oxides, the ratio ranging from 13 to 7. The proportions of TiO_2, FeO, MnO and SnO_2 average around 3.0, 18.0, 2.0, and 2.5 percent respectively. The specific gravity ranges from 5.4 for concentrate with 2 percent Ta_2O_5, to 5.6 with 10 percent Ta_2O_5, and on to 7.5 for high-grade (80 percent) tantalite, the specific gravity being a fairly reliable indicator of the ratio for clean ore. Concentrate from the Belgian Congo is said to average 52.5 percent Cb_2O_5 and 27.5 percent Ta_2O_5. The size of grain may be 30 percent between 100 and 150 mesh with 70 percent between 50 and 100.

The United States' national stockpile specification of September 28, 1949 for columbite called for a ratio of 9 to 1 of Cb_2O_5 to Ta_2O_5 for Grade I columbite and a minimum corresponding ratio of 1 to 1 for Grade II. The minimum acceptable content for Cb_2O_5 plus Ta_2O_5 was 60 percent for Grade I and 55 percent for Grade II. The maximum proportions of other constituents acceptable for both grades were titanium oxide (Ti_2O) 8.0 percent, oxide of iron (FeO) 25, manganese oxide (MnO) 4.0 and tin oxide (SnO_2) 8.0.

There are many known minerals which contain columbium. The best known after the columbite group are in the pyrochlore group of which pyrochlore and koppite may become important ores. Much research is being done to find commercial methods of separating the 0.2 to 0.4 percent of columbium from the accompanying minerals. The difficulty is usually the extreme fineness of the

Nigerian natives cleaning tin-columbite concentrate out of a crude sluice box.
Steelways photograph.

This six-cubic-yard electric dragline is stripping 70 feet of barren overburden from a Nigerian tin deposit.

grains, a large proportion approaching 20 micron size, and a specific gravity (4.2) not very different from those of some of the associated minerals.

Columbium is used mainly in the austenitic chromium-nickel stainless steels to inhibit intergranular corrosion. Most chromium-nickel austenitic stainless steels that do not contain a stabilizing element, such as columbium, are susceptible to intergranular corrosion and physical impairment when subjected to the temperature zone of 800° to 1,600° F. This is caused by carbide precipitation at the grain boundaries at these temperatures. Although proper heat-treatment will restore corrosion resistance and physical properties, such a heat-treatment is not necessary for stabilized stainless steels. Hence columbium-bearing stainless steels are widely used in the fabrication of welded equipment, especially when heat-treating at high temperatures is costly or impractical. The beneficial effects of columbium are due to the fact that it has a greater affinity for carbon than have chromium and iron; and also that it forms a stable, harmless carbide. A minimum columbium-carbon ratio of 10 to 1 is required for best results under the most severe temperature conditions.

Strength At High Temperatures

Extensive investigations on metals for use in jet aircraft engines and gas turbines have shown that columbium is one of the most important elements for imparting strength at elevated temperatures to high alloy compositions. The use of columbium, as in the case of the stainless steels, creates stability under high temperature exposure and preserves high temperature strength during long exposures to temperatures up to about 1550° F. or slightly higher. Columbium is being used in both ferritic and austenitic metals as a single constituent and in combination with other relatively strong carbide forming elements such as molybdenum and tungsten for increasing high temperature strength.

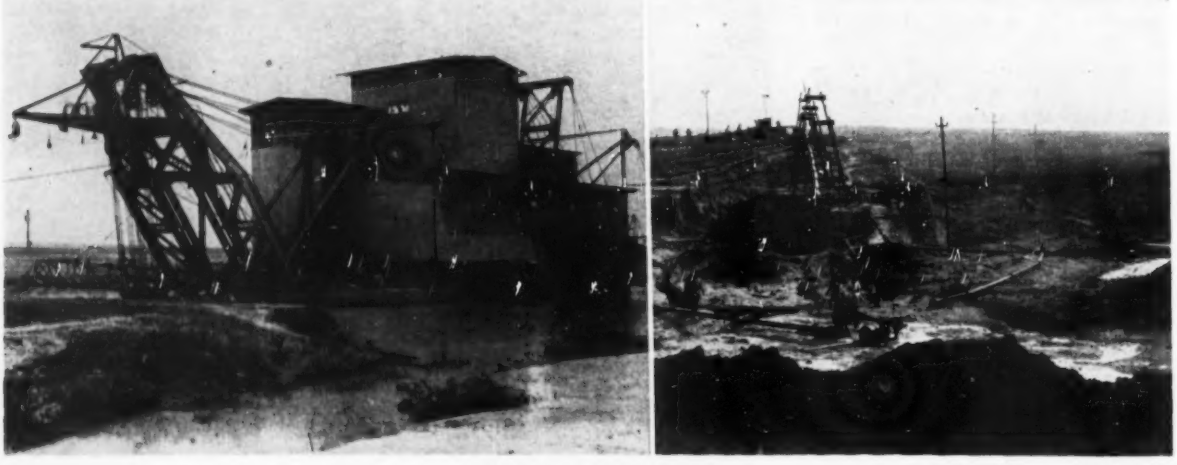
Its high temperature influence as a single constituent is clearly discernible when it is realized that the 18-8 steel containing columbium (Type 347) has become standard material for certain sheet metal parts, bars and forgings for jet engines, which must resist excessive distortion at high temperatures. Also the 347 steel has become widely used in exhaust systems of conventional aircraft engines for the same reason. The columbium-bearing stainless steels are ideally suited for elevated temperature use because forgings of high quality are easily produced from ingots of the steel, and the service obtained from such parts has amply confirmed the value of columbium as a high temperature strength forming element.

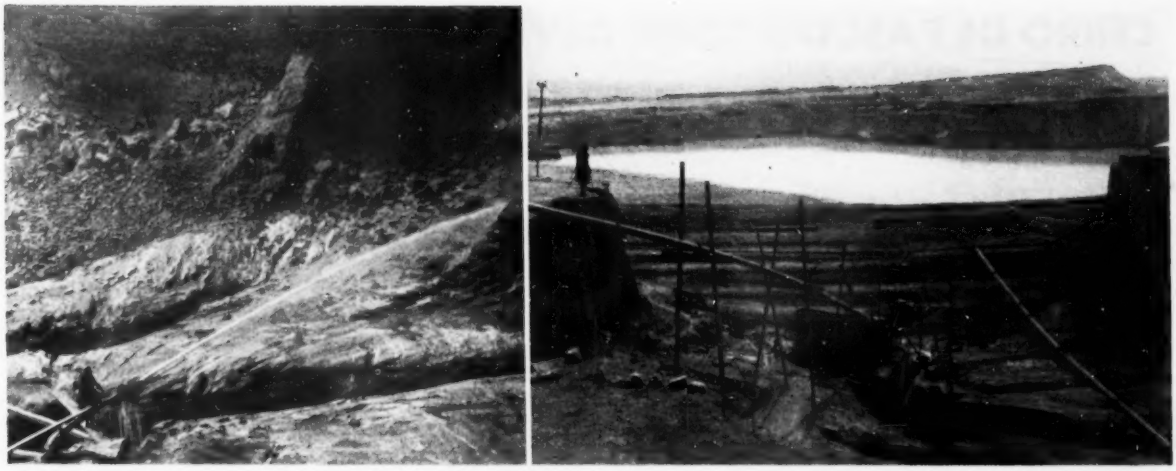
Importance In High Alloys

The influence of columbium in the more highly alloyed metals designated as super-alloys is even more impressive because most of the present jet aircraft engines are produced with turbine buckets containing columbium, or turbine wheels containing columbium. More specifically, there are a number of high temperature iron, nickel, and cobalt base alloys that contain columbium as a constituent in combination with the metals molybdenum, tungsten, vanadium, and titanium.

In most of these high temperature metals, columbium, as in the case of stainless steels, is utilized in relation to the carbon content. The metals with the best high-temperature strength contain in the neighborhood of 10 times as much columbium as carbon. This ratio has been found to be equally as effective in castings as well as in wrought products such as bars, forgings, and sheets. The percentages of columbium to be found in the alloys for high temperature service will vary between 0.5 and 4.0 percent. One of the most important features of these high temperature metals is that while they are difficult to hot work because of their exceptionally high strength they are not subject to se-

LEFT: The Dorowa dredge of the Amalgamated Tin Mines of Nigeria, Ltd. is operating in the Dorowa Valley of Nigeria. The 10-cubic-foot, connected bucket line dredge digs 50 feet below water level and handles 400 cubic yards per hour. RIGHT: A gravel pump at one of the tin mines in northern Nigeria. Gravel from the bank at right is washed into pump's sump and elevated to the sluice box on the bank at left.





LEFT: Hydraulicking a gravel bank. The light-colored rock in front of the nozzle is granite bedrock. The five- to eight-foot-thick layer of tin and columbite-bearing gravel lies on bedrock. The thick overburden above the gravel contains no tin. RIGHT: A gravel pump in the foreground and the return water dam in the background at Naton, Nigeria. During the six months of the dry season, water is stored and reused over and over again for washing the gravel.

rious cracking provided proper hot working conditions are maintained. The comparatively good hot working characteristics of these alloys is undoubtedly connected with the beneficial influence of columbium on the cast grain structure of the ingots.

Columbium is added to steel in the form of ferrocolumbium. This ferro-alloy is available in a number of crushed sizes. When it is added to a deoxidized steel bath and allowed to remain at least 20 minutes before tapping, a recovery of approximately 90 percent may be expected.

Another use of columbium is for reducing air-hardening characteristics and improving ductility in the plain chromium steels of the corrosion-resistant type. The amount of columbium required for this purpose is 8 to 10 times the carbon content.

Ferrotantalum-Columbium Alloy

It has long been known that tantalum can be substituted for columbium in the 18-8 stainless steel to inhibit intergranular attack, but on a weight basis approximately twice as much tantalum as columbium is required. Tantalum occurs in the form of a tantalite ore that is limited as to availability to even a greater extent than is the columbite ore. It is fortunate though that ores containing both columbium oxide and tantalum oxide occur in nature in greater quantity than either oxide alone, and that the Electro Metallurgical Company has been able to smelt such oxides to obtain a ferro-alloy containing both columbium and tantalum that has materially added to the availability of columbium for consumption by the steel industry.

Tantalum Extends Columbium

The ferro-alloy produced from these oxides is one consisting of approximately 20 percent tantalum and 40 percent columbium and is used in the same manner as the ferrocolumbium alloy to inhibit intergranular corrosion in the 18-8 steel, and to impart high temperature strength to high temperature metals used in jet aircraft engines and other gas turbines. While it is necessary on an equal weight basis to have present approximately twice as much tantalum as columbium in stainless steels to inhibit intergranular attack, the results with respect to high temperature strength show that on an equal weight basis tantalum is at least as effective as columbium in high temperature metals. As in the case of columbium, a columbium plus tantalum content of at least 10 times the carbon content will be sufficient to obtain practical immunity to intergranular attack in austenitic stainless steels. It should be emphasized in the case of high temperature metals that, on an equal weight basis, tantalum is slightly more effective in imparting high temperature strength than columbium. Thus, in applications of both types the ferrotantalum-columbium alloy is truly a sister alloy to the ferrocolumbium alloy and represents a product that has been of great benefit in connection with the availability of columbium.

A group of Nigerian natives operating a Banka prospecting drill in the Ropp district, Nigeria. The drill can be used to depths up to 90 feet.

CERRO DE PASCO'S "ZINC DEVELOPMENT PLAN" REOPENS MINE AND BUILDS HYDRO-POWER PLANT

As the Cerro de Pasco Corporation starts its 51st year of operation, the "zinc development program" is well under way.

Key units in the zinc program are refining units. The 35-ton-per-day electrolytic plant has been in operation since the first of the year. Construction is continuing on the first unit of the Sterling Process electrothermic zinc plant. The Oroya smelter has been expanded and now produces refined copper, lead, bismuth, zinc, silver, gold, indium, cadmium, thallium, sheet lead, lead-tin alloy, lead-bismuth alloy, tellurium-lead alloy, crude antimony and lead-antimony alloy, calcium arsenate, sulphuric acid, calcium carbide, copper sulphate, zinc sulphate, oxygen gas, arsenic trioxide, hydrofluorosilicic acid, silica brick, fireclay brick, magnesite brick, slag brick and byproduct coke.

Additional zinc ore tonnages and electric power are also part of the program and means to provide them are described below.

San Cristobal Mine Reopening

This mine has belonged to Cerro de Pasco since 1920, but has been in active exploration or operation only for three stretches totaling 12 years. Its chief values are in zinc, but lead, silver, tungsten, and copper also occur. Main adit level is at 15,500 feet, and workings extend up to the outcrops at between 16,000 and 17,000 feet. Now that the zinc capacity of the Oroya smelter is being expanded, and the Mahr concentrator enlarged—the latter is connected to San Cristobal by a 12 km. Bleichert bicable tramway—the mine is once again being prepared for production under J. S. Semmens, assistant superintendent.

Paucartambo Power Project

One of the costliest sections (probably plus $12,000,000) of Cerro de Pasco's current expansion program, primarily directed to increased output of zinc and lead, is the new power plant on the Paucartambo River. This river flows steeply down the western slope of the Andes from near the edge of the plateau of Junin to join the rivers Oxapampa and Chanchamayo, which form the Rio Perene, a tributary of the Ucayali, itself a tributary of the Amazon. Access is via Carhuamayo, a town on the Oroya-Cerro de Pasco road and railway, whence there was an existing road to within 8 km. of the village of Paucartambo. This road was improved and the 60 km. of new road to the plant site are nearing completion.

3,000 Men Build Road

Due to the steepness of the valley, excavation was extensive, averaging 40 cubic meters for every meter of advance over much of the route, and progress was hindered by very heavy rockslides, which prevented the advance of machinery; thus 30 km. were graded by hand, by an average of 3,000 men, who had to be supplied by pack animals over rugged trails. The slides were dealt with by washing down to solid rock with monitors. The road will be built for loads up to 20 tons and 60 feet long.

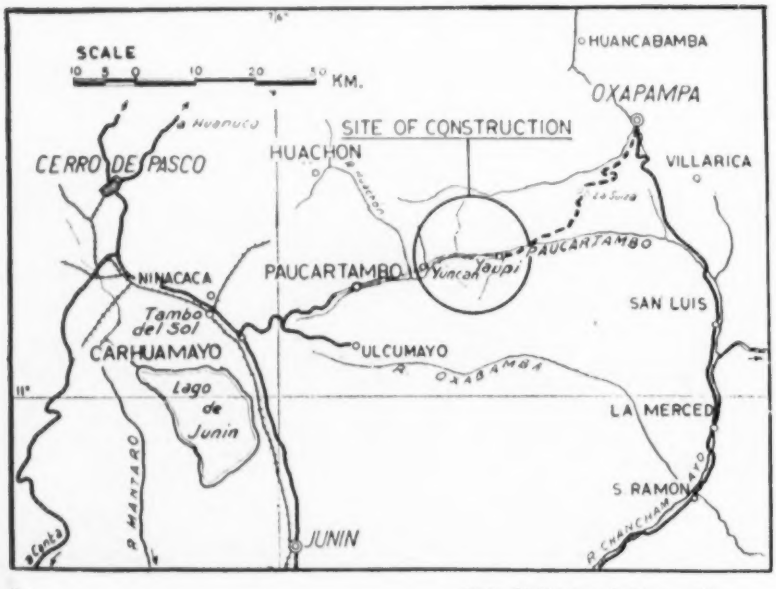
At Yuncan a diversion dam, sand traps and intake will be built, leading to ½km. of open canal and 12½ km. of tunnel, gaining a head of 1,600 feet for the power plant at Yaupi. The tunnel, a pressure type, to be concrete-lined, will be driven from six faces from three adits portaled in the valleyside perpendicular to the tunnel course; there will be a camp for tunnel crews at each adit, and, with three shifts, it is hoped to make an advance of 36 meters per day in all headings together.

High Voltage Power Line

The transmission line is under construction so that power for the work can be taken from the Corporation's existing network near Carhuamayo; wooden towers are being used. Power from the new plant will be taken by this same line back to Carhuamayo and thence by an extension of the new line to Oroya, at 138,000 volts. The new plant will become the base plant of the Cerro power system, with the previous one, Malpaso (51,000 kva. installed—an extra 17,000 kva. unit planned) becoming the regulator plant. This will increase the installed capacity of the system from 84,750 to 156,750 kva. (provided by one steam and four hydroelectric plants).

Construction is being carried out by the contracting firm of Christiani and Nielsen, with Ebasco Services as Consulting Engineers.

Cerro de Pasco Corporation's new power plant will be the first to develop the vast hydroelectric power resources of the eastern slope of the Andes Mountains where the great tributaries of the Upper Amazon River flow from elevations of about 15,000 feet down to the Amazonian plain.



WHAT TO SEE –

at the Metal Mining Show

IF UNABLE TO ATTEND

Literature and information on the products displayed may be obtained by filling in the number appearing after each item of equipment on the Yellow PEP postcard in this section and mailing.

Otto Herres, vice president of the Combined Metals Reduction Company, Salt Lake City, Utah, is national chairman of the program committee.

William J. Coulter, vice president in charge of mining, Climax Molybdenum Company, Denver, Colorado, is the general chairman of the convention.

C. B. Stainback, executive, Westinghouse Electric Corporation, Pittsburgh, Pennsylvania, is chairman of the manufacturers division of the convention

PROGRAM

A special feature of the program will be a series of "panels," or informal discussion periods, in which representatives of the Federal government will join with the leaders of the mining industry to consider current problems. Governmental speakers from Washington, D. C. will represent the United States Senate, the House of Representatives, the Defense Materials Procurement Agency, the United States Geological Survey, U. S. Bureau of Mines, U. S. Atomic Energy Commission and the Bureau of Land Management.

Arthur H. Bunker and George R. Brown, commission members of the President's Materials Policy Commission, will present their views on the commission's report. Industry spokesmen will be called upon to give their views.

Seven sessions will be devoted to general policies and problems concerning production and development. Six operating sessions are scheduled to cover equipment, methods, safety and mechanization.

Burt R. Brewster, editor and publisher of the *Mining and Contracting Review* will preside at a symposium planned for the small mine operators.

FIELD TRIPS

One-day airplane trips are scheduled for Friday, September 26, to the Colorado Plateau uranium-vanadium districts, to the mine and mill of the Idarado Mining Company at Red Mountain, Colorado, and to the U. S. Bureau of Mines' Rifle, Colorado, experimental oil shale mine.

Bus trips will also be made on Friday to the famed Cripple Creek-Victor gold mining district and to the Minnequa steel works of the Colorado Fuel and Iron Corporation.

ENTERTAINMENT

A night of fun is scheduled, the Mining Jamboree at the Rainbow Ballroom on Monday, September 22. "An Evening With Victor Herbert" will be the featured musical entertainment of the Exposition. It will be held at the City Auditorium on Thursday night, September 25.

EXHIBITS

More than 140 leading mining equipment and machinery manufacturers will display their latest mechanized equipment at this important Machinery Exposition. Many of the exhibits will feature actual mining equipment, much of it in operation. In addition, scale models, motion pictures and other graphic media will depict operations at the nation's most important mines and processing plants.

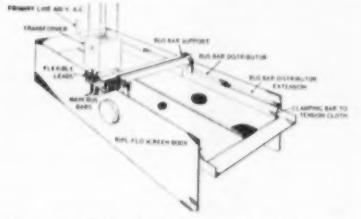
AERO SERVICE CORPORATION—How the new exploration tool, the airborne magnetometer, works for the mining industry will be shown by this firm. A magnetic map for an important iron ore body will be displayed, as will other examples of aerial mapping for the mining industry, including aerial photos for geologic study, timber typing and general planning uses. Also to be shown are topo-

graphic maps produced at a fraction of ground mapping costs for mining engi-

neering requirements. Aero photogrammetric engineers with broad experience in mapping and exploration will be available for technical consultation. Literature concerning airborne magnetometer surveys and the aerial mapping service for various metals and minerals is available. (1)

ALLEN-SHERMAN-HOFF PUMP COMPANY—The latest models of Hydroseal pumps (2) will be the central attraction of this exhibit. A background display illustrating their use on various mill duties will also be available.

ALLIS-CHALMERS MANUFACTURING COMPANY (General Machinery): A feature of this display will be an operating 3 by 8-inch Ripl-Flo screen with



Thermo-Deck heating unit (3). The Thermo-Deck resistance heating arrangement facilitates screening of moisture-bearing materials and consists of a step-down transformer and bus bars that provide a harmless low-voltage current to the wire cloth screen. Other equipment to be shown includes a scale model of a 60 by 40-inch A-1 jaw crusher (4), a model of a Hydrocone crusher (5), a 4 by 8-foot rod-deck screen (6), rubberline and process pumps (7), and a Vari-Pitch motion-control sheave (8).

ALLIS-CHALMERS MANUFACTURING COMPANY (Tractor): Mechanization in mining is the theme of this exhibit. Equipment to be shown is the Allis-Chalmers HD-20 crawler tractor with bulldozer (9) and the HD-9G crawler tractor with front-end shovel (10).

ALLOY STEEL AND METALS COMPANY will display its machinery by showing photographs backed with fluorescent light. To be shown is the operation

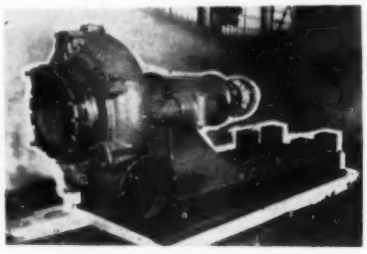
of a Pacific Round-the-Corner sheave block (11) in conjunction with a Pacific model 2A 34-inch Slushmaster scraper (12) and Pacific model 8-C sheave block (13), working in a square-set stope. Production models of the Round-the-Corner sheave block, Slushmaster scraper model C and CF sheave blocks (14) and sheave anchors (15) will also be exhibited.

AMERICAN BRATTICE CLOTH CORPORATION will display a product that has just emerged successfully from a year's testing, the inflatable brattice (16). The innovation is described as having the advantages of lower brattice costs with better ventilation on the working face. The firm will also show mine vent tubing with demountable couplings (17) and ABC brattice cloth (18).

AMERICAN MINE DOOR COMPANY—Main attraction will be the Canton car transfer (24), in the actual size used for a standard installation on 30-pound steel track with a 24-inch gauge. The ease and short time required to install and remove the device will be demonstrated, and a C. S. Card Iron Works company car will be used to demonstrate the process of by-passing many cars on a single track. An automatic switch thrower (25) and the "midget" rock duster (26), as well as a built up background describing all of American Mine Door's products, will be on hand. Charles Vignos II, general manager, and Glenn Gurney, chief engineer, will be in charge of the exhibit.

AMERICAN STEEL AND WIRE—Wire rope will be the foremost product in this show, and all types and sizes will be displayed (27). Slings (28), Amerclad electrical cord and cable (29), and power rail bonds (30) are also to be included.

AMERICAN MANGANESE STEEL—This company will show five different types of equipment, including a working scale model of an AMSCO 10-inch materials handling pump (19), a model AMSCO renewable-lip power shovel dipper (20), various pieces of equipment hard-faced with AMSCO welding rods and electrodes (21), the new Wearsharp

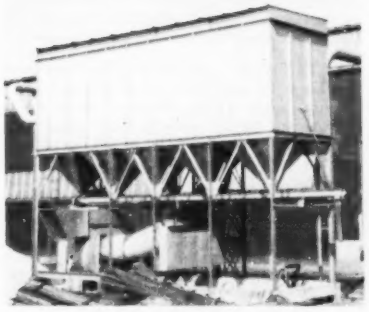


dipper tooth repointer and other repointer bars (22), and the Rever-sharp dipper tooth (23).

ANACONDA WIRE AND CABLE COMPANY—Anaconda will show miniature models simulating actual mining operations both above and below ground, highlighting the various types of wire and cable applicable to each operation (32). One main panel will feature the latest design for cable improvement.

AMERICAN WHEELABRATOR AND EQUIPMENT CORPORATION—All aspects of the Dustube dust collector (31) will be shown by this firm. A cut-away model of an actual full-sized No. 5 model 112 will be available, as will photographs of dust collection systems in various mining and metallurgical installations and a flow sheet of a lead smelting plant, showing how various operations in it are served by the Dustube. The makers of this product, which consists of cloth tubes to filter the air, claim an efficiency rating of 99 percent. The Dustube may be used in mining and metallurgical industries to recover dusts given off by car dumping, crushing, sampling, screening and drying,

The Bucyrus-Erie 150-B excavator in operation.



or it may be used to collect fumes from blast furnaces, sintering machines, electric funaces, reverberatory furnaces and other hot operations in non-ferrous smelters.

ARMCO STEEL CORPORATION—Widely diversified products will be shown by this firm. They include a full-scale

tunnel liner (33), fan duct and explosion door (34), sheeting (35), Flex-Beam guardrail (36), a model Steelox building (37), pictures of a conveyor belt (38) and an industrial railroad track (39).

ATLAS POWER COMPANY—Progress in mining through the years will be linked with progress in the development of explosives by this firm. Actual samples of material, augmented by photographic transparencies, will be shown. Machine-gun photographs will be used to show blasting techniques, emphasizing the advantages to be gained with the Rockmaster blasting system (40).

BEMIS BROTHERS BAG COMPANY—will show Flexipipe ventilation tubing

(43) used for directing fresh air to where it is needed in underground mines and tunnels. Various methods of suspension and different types of couplings will be included. I. D. Teter of Bemis' St. Louis office will be in charge of the display.

BARBER-GREENE COMPANY—Twelve hand-colored photo murals will be used to display typical operations of this company's complete line of permanent conveyors (41), with photo transparencies

illustrating use of B-G conveyors with allied machines. Six carrier units will also be on exhibit (42).

BETHLEHEM STEEL COMPANY—Roof bolts (44), steel ties (45), Ar-Moored ties (46), mine frogs (47), wire rope (48) and wheels (49) are the products to be shown by this steel producer. Two types of roof bolts, the newest Bethlehem product for mine use, will be on display. One is an assembly consisting of a ¾-inch headed bolt, plug and expansion shelf for use in a 1 and ⅞-inch hole, and the other is a 1-inch slotted bolt with wedge for use in a 1 and ¼-inch hole. Both bolts reportedly help to reduce the number of accidents from roof falls. J. R. Ulrich will be in charge of the exhibit.

Unable to Attend?

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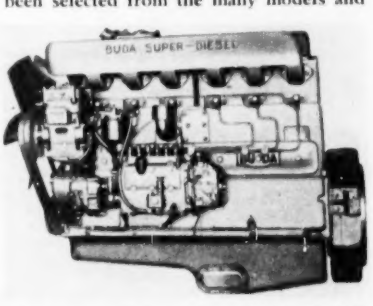
Caterpillar Diesel D7 tractor equipped with No. 7A bulldozer stockpiling ore at the Caselton Plant of the Combined Metals Reduction Company, located nine miles west of Pioche, Nevada.

BIXBY-ZIMMER ENGINEERING COMPANY—The method of mounting and use of Bixby-Zimmer round rod all-welded stainless steel screens (50) will be shown on an operating scale model vibrator.

BUCYRUS-ERIE COMPANY—Photographic presentations of B-E products used in the mining industry will make up this exhibit. Products to be shown include walking draglines (51), stripping shovels (52), dredges (53), blast-hole drills (54), tractor equipment (55), Hydrocrane (56) and Hydrohoe (57).

BUDA COMPANY will show four heavy-duty diesel engines and one diesel-electric generator set. Three of the diesel engines will be equipped with torque converters. For heavy-duty haulage and ore trucks there is the Buda 8-DAS-1125 diesel with Twin Disc torque converters (58); for large 2 to 2½-yard shovels there is the 6-DAS-844 diesel power unit with Torcon torque converter; (59) for all types of heavy-duty trucks and haulage units there is the Buda-6-DAS-844 supercharged diesel (60). The 6 KW diesel electric generator set (61) has been selected from the many models and



sizes of generator sets which the firm manufactures for mining and quarrying purposes.

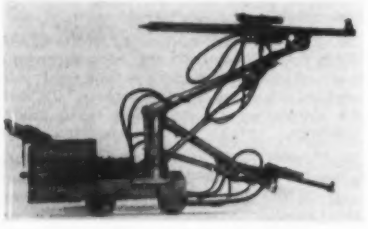
E. D. BULLARD COMPANY—Three new models of molded Fiberglas hard boiled hats and caps (62) will be featured in this exhibit. Also announced for the first time is a safety hat (63) guaranteed to test 10,000 volts with a leakage of no more than 5 milliamps, for use by

workers exposed to electrical hazards. Manufacturers of this hat claim that it also exceeds drop test standards of 40-foot pounds impact. Improved mine first aid kits and fills (64) are being shown with mine safety belts and other personal safety equipment (65).

C. S. CARD IRON WORKS—Various types and sizes of cars will be shown (348). Tentative arrangements call for display of a model of an underground mining railway system ready, complete with rope haulage and operating cars.

CATERPILLAR TRACTOR COMPANY—A D7 Caterpillar diesel track-type tractor (66) will be given the feature spot in this show, which also includes a DW10 diesel wheel-type tractor (67), a D397 500 hp diesel engine (68) and an HT6 and an HT4 hydraulically operated Traxcavator attachment. (69). Four members of Caterpillar's sales department, George Fenn, Ken Ames, W. H. Hogan and Jack Crowley, will handle the exhibit.

CHICAGO PNEUMATIC TOOL COMPANY—The rail-mounted, twin boom 600 jumbo (70) is the central element in



this large exhibit, and the new Airleg (353) is also to be featured. To illustrate typical mountings, a 6-foot chain feed and a 4-foot shell type feed will be installed on the jumbo, and visitors will be permitted to "get the feel" of the throttle sensitivity controlling the pressure-balanced feed leg of the new Airleg. Other drills on exhibit will be the CP-50N drifter for use with tungster-carbide bits (72), the CP-55 diamond drill for coring and blast holing (73), gasoline-driven and skid mounted core drills (74), a line of sinker drills for secondary breaking (75), demolition tools for trimming and brushing (76) and a mobile bolting unit (77). Mine maintenance equipment (78) and air compressor installations will also be shown (79).

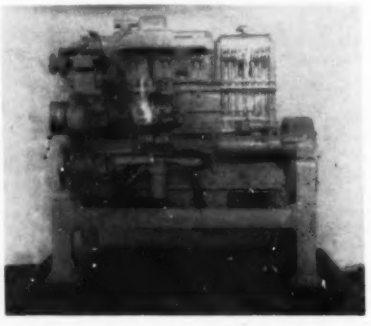
CHRISTENSEN DIAMOND PRODUCTS COMPANY—A display showing the steps required in the manufacture of a diamond bit will serve as background for this exhibit of core bits (80), casing shoes (81), casing bits (82), pilot bits (83), concave bits (84) and reamers (85). W. I. Harris, sales manager, will be in charge.

COLORADO BUILDERS' SUPPLY COMPANY—A large detailed model exhibit, built to scale and covering 48 square feet of space, will show phases of various types of construction such as concrete highway work, dam construction, mining, reinforced concrete structure work, asphalt paving of city streets and many other examples of maintenance and building projects. The model also features a complete farm setting, a down-town area and two true-scale, operating railroads (86).

COLORADO FUEL AND IRON CORPORATION—Comfort for visitors, not business as usual, is the central theme of this unique exhibit. Here conventioneers may make use of chairs, divans, tables, water coolers and a secretarial service in pleasant surroundings. Shadow boxes and display boards will exhibit CF&I products, but they will be secondary in importance.

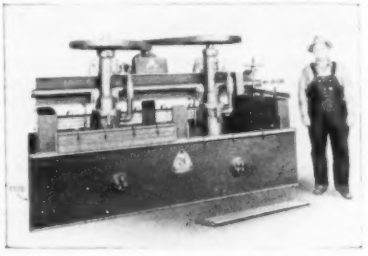
COLORADO IRON WORKS COMPANY will exhibit models, descriptive literature and pictures of the Akins classifier, (87) Akins heavy media densifiers and separators (88), Skinner roaster (89) and Lowden drier (90).

CUMMINS ENGINE COMPANY—Two activated cutaway diesel engines will be



on display, one the model NHRS-600 engine (91) rated at 300 hp at 2,100 rpm and the other model NVHS-1200 engine (92) rated at 550 hp at 2,100 rpm. Also included in the display will be an activated dealer map showing worldwide Cummins sales and service locations.

DART TRUCK COMPANY—The Dart exhibit will consist of an extra-heavy duty mining truck (93) complete with body and hoist, Dart's heavy duty planetary-type rear axle, (94) a 350-hp diesel engine (95) and a three-stage hydraulic torque converter (96) with its down-hill braking feature. Cutaway sections of the axle and other component parts will also be displayed.



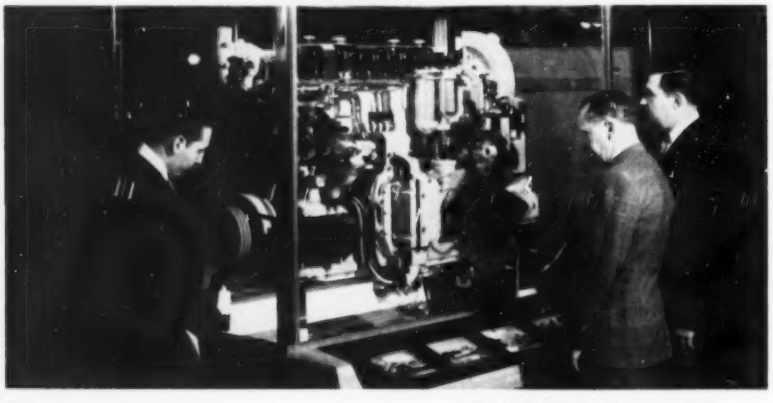
DENVER EQUIPMENT COMPANY—The firm's new flotation machine will be easily visible to spectators, since the demonstration model has a glass front, glass sides and special interior lighting. The machine, called the two-cell #24 super rougher and scavenger (97), is equipped with double impellers and star launder. An ultra-violet mineral display will also be in the Deco booth, and conventioneers will be provided with special transportation to Deco's factory if they wish to visit it.

DETROIT DIESEL ENGINE DIVISION, General Motors Corporation—The operation of the GM torque converter and the GM diesel fuel system will be shown in a display of a motorized cutaway engine model, 2-cycle Series 71 and 6-110 diesel engines and other activated displays (98). The engines to be shown include a 3-cylinder torque converter unit (99), a 6-cylinder 6-110 engine with torque converter (100) and a "matched pair" of 6-cylinder Series 71 engines also with torque converter (101). R. V. Baxley, sales manager of the division's contractors' equipment department, will be in charge of the exhibit.

DINGS COMPANY—Models will be displayed of the Type EBK Crossbelt high intensity magnetic separator (102) for the concentration of weakly magnetic substances, the Type KW Drum (103), a wet process separator for concentrating magnetite and taconite ore, and the Type RM Rectangular Magnet (104) suspended over a belt, for removing tramp iron. Photographs of other products include the Type IR induced roll high intensity magnetic separator (105) used for concentrating, Dings' Crockett separator (106) for recovery of heavy media and concentration of magnetite, and the Dings electromagnetic pulley for tramp iron removal (107).

DU PONT COMPANY—Primacord (108) and Ignitacord (109) are two Du Pont products to be seen in this exhibit. Primacord is used in MS connectors for short interval delay firing of blast in open pits, while the Thermalite Ignitacord is for use in lighting rounds fired with safety fuse and caps. Du Pont's condenser discharge blasting machine (110) and a number of other Du Pont products for use in mining ore will also be shown.

Motorized cut-away model of the GM 6-110 Diesel engine will be one of Detroit Diesel Engine Division's exhibits.



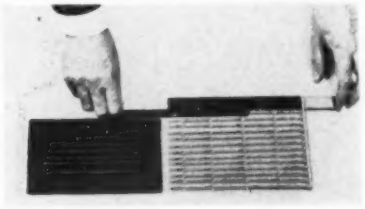
EASTON CAR AND CONSTRUCTION COMPANY—Easton, exhibiting for the first time at the Metal Mining Show, will display photographs of its novel side-dump trailers and truck bodies. Types included are pan-type (111), lift-door (112), and hydraulically dumped drop-door (113). The hydraulically dumped unit, which can be mounted on any heavy duty chassis, is reportedly the most versatile, since it can be used to handle earth, rock, ore or mixed loads and can dump anywhere at will with no need to back and turn at the dumping point. A new side-dump trailer with gooseneck hitch (114) will also be shown. George D. Fraunfelder, director of engineering and research, will handle the exhibit.

THOMAS A. EDISON, INC.—Cutaway cells will be used to point up construction details and advantages of steel construction of two Edison nickel-iron alkaline storage batteries. One is a typical battery used to power trammer locomotives (115), and the second is a typical battery used to power industrial lift trucks and tractors (116). A visitor-operated exhibit consisting of a positive tube and negative pocket suspended in electrolyte and magnified, will be used to demonstrate lack of adverse effects on the Edison cell after being charged at many times the normal rate.

EIMCO CORPORATION—A complete line of loading machines and filtration equipment for the mining and metallurgical industries will be shown by this firm, with some equipment being shown for the first time at the Metal Mining Show (117).

ELECTRIC STEEL FOUNDRY COMPANY—Principal features of the display will be specialty alloy steel castings for corrosion, heat and abrasion-resistant service in such items as bucket teeth and adapters, rooters, dozer blades and bits, stainless values, fittings and spuncast pipe (118). ESCO men in attendance will be C. E. Haney, Lon Henderson, Bill Rice, N. J. Vanelli and E. T. Hewitt.

ELECTRIC STORAGE BATTERY COMPANY—The Exide Ironclad battery (119) for industrial service will be shown, with two novel features being pointed up. Silvium, a new alloy, is used on the positive plate grids because it re-



portedly reduces the corrosion factor and assures longer battery life. Exide officials state that they have solved the problem of loss of active material from the positive plates with the introduction of a tube sealer molded of polyethylene.

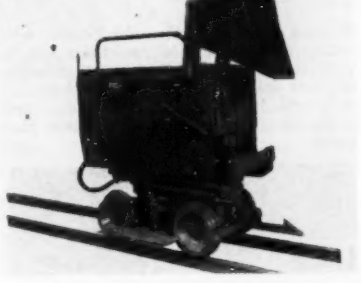
EUCLID ROAD MACHINERY—Two rear-dump trucks used in open pit mining operations will be exhibited by Euclid. One, the model IFFD (120), is the largest load-on-back in standard production and commercially available, and has a payload capacity of 68,000 pounds. It is powered by two General Motors 190 hp diesel engines, with each engine driving one of the rear axles through a torque converter and torqmatic transmission. The other, the model 36TD (121). has a 44,000-pound payload capacity, and is

Joy Manufacturing Company drillmobile, for mechanized drilling, to be featured in exhibit at the 1952 Mining Show.

powered by a Cummins 300 hp diesel driving a planetary Euclid drive axle

through a torque converter and torqmatic transmission. This latter unit is available with either standard or rock body.

GARDNER-DENVER COMPANY—On display will be hydraulic air-operated jumbos (320), mine car loaders (321),



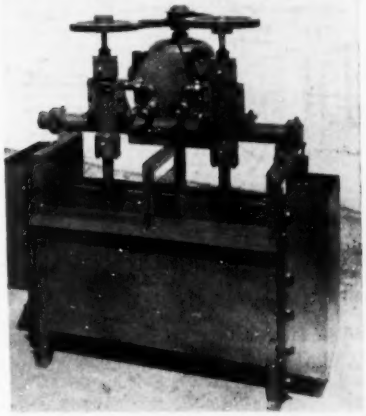
air compressors (322), air operated hoists (323), drifters (324), stopers (325) and a large quantity of pneumatic tools (326). Featured item will be the mine car loaders.

FARVAL CORPORATION (AND CLEVELAND WORM & GEAR COMPANY)—This exhibit will be built around two display islands, one showing a Cleveland Speedaire fan-cooled worm gear with speed reducer (122) and the other showing Farval centralized systems of lubrications (123). A cutaway of the worm gear will be used to show internally-ribbed, double wall construction designed to promote maximum heat transfer to air drawn in by a fan located on the worm shaft. The reducer will be in operation so that viewers may see how lubricant is carried from the sump by the worm gear and distributed to the bearings. The other display will show how the Farval Dualine system delivers a measure amount of lubricant from a central station to all the bearings on a machine as frequently as necessary.

LUBRIPLATE DIVISION, FISKE BROTHERS REFINING COMPANY—Moving equipment will be used to depict the suitability of Lubriplate lubricants (124) for mining machinery, both under adverse operating conditions and under water. J. B. Tiernan will be in charge of the exhibit.

FLEXIBLE STEEL LACING COMPANY—The main display in this booth will be a 20-foot long conveyor showing the firm's fasteners in action on a 24-inch wide conveyor belt. Literature will be available covering Flexco belt fasteners (125), Flexco hinged fasteners (126) and Alligator wide belt cutters (127).

THE GALIGHER COMPANY—The Agitair flotation machine (128) will be the featured item of this exhibit, and two



new products, the Vacseal rubber lined pump (129) and the Davis agitator (130), will be placed on display for the first time. In addition, Geary-Jennings automatic sampling machines (131), slush and sludge pumps (132) and ore dressing equipment (133) will be shown. Metallurgical engineers will be in attendance to explain equipment as to detailed operation, construction and practical application.

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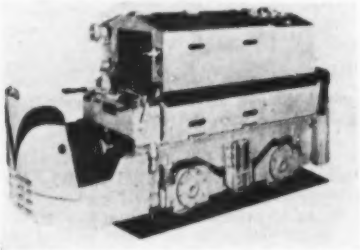
GENERAL CABLE CORPORATION will present its new Safety mineral insulated wiring (134).

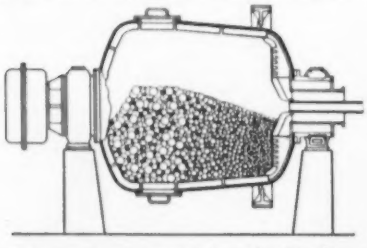
GOODMAN MANUFACTURING COMPANY—To be featured are an industrial-type shaker conveyor designed for moving hot and abrasive materials, and three mine locomotives, including a new four-ton diesel unit. The shaker conveyor (135), with its overlapping type troughing, is used for moving such hot materials as sinter, coke carborundum, mill



scale, dolomite and steel scrap. The diesel locomotive (136) is powered by a 45 hp engine driving through a torque converter. The other two locomotives are storage battery types, a 5-ton unit (137) and the 1½-ton Mancha's Little Trammer (138).

GENERAL ELECTRIC COMPANY—Feature item will be the new gas turbine (327) for power generation and similar applications. Also to be shown is a line of Triclad motors (328) operating under dust, gas and moisture conditions, gear motors (329) in both standard and adjustable speed types, new motor control centers (330), magnetic starters (331), new oil-tight push button units (332), mine communication sets (333), lamps (334) and cable for mine service (335). In addition, a number of repair operations will be undertaken to show work done in local service shops.

HARDINGE COMPANY—A working glass model of the new Hardinge Tricone mill (139) will illustrate grinding action and ball segregation. Also on display will be a glass model of a Ruggles-

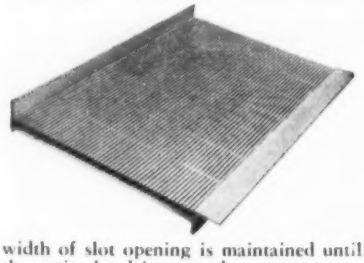


Coles rotary dryer (140) and a Hardinge constant weight feeder (141), plus a series of colored transparencies showing typical Hardinge installations. F. W. Lutter of the Hardinge San Francisco office will be in charge of the exhibit.

HARNISCHFEGER CORPORATION—Products to be shown include an operating scale model of a P&H excavator (142) and of 1055 (3½-yard machine) Magnetorque swing clutches (143). Also, two Zip-Lift hoists of ½-ton and 1-ton capacities (146), a DC 300 rectifier welder (145), a low hydrogen electrode display board (146) and colored translites of P&H electric shovels (147) at varied metal mining installations will be displayed.

HAYNES STELLITE DIVISION, Union Carbide and Carbon Corporation—Use of Hastelloy alloy in cast and wrought parts (336) in resisting corrosion in ore processing plants will be the main attraction at this booth. Pumps, filters and scrubbers will be used as examples. In addition, tungsten carbide inserts for detachable drill bits (337), hard-facing materials (338) used to protect drill rods, grizzlies and drag-line buckets, plus special wear and heat-resistant castings, forgings and parts fabricated from sheet (339) will be on hand. Several typical parts produced by the Haynes precision-investment-casting process (340) will also be included. J. W. Todd is in charge of the exhibit.

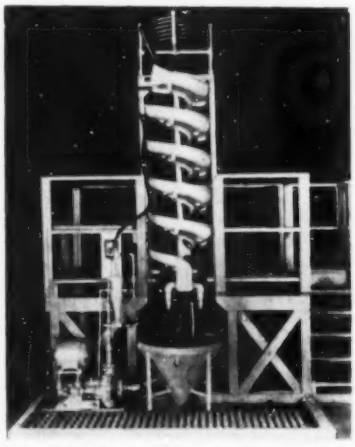
HENDRICK MANUFACTURING COMPANY—The new Wedge-Slot screen (148), for use in very small openings, will be shown with new types of profile bars for use with the screens. These new types, C-12 and CH-12 (149) has their head flanges designed so that uniform



width of slot opening is maintained until the entire head is worn down.

HERCULES MOTOR CORPORATION—A representative number of the 65-model line of gasoline and diesel engines and power units will be exhibited. One or two cutaway models will be used to show the internal working parts of the Hercules engines, which range from 3 to 500 hp. Literature is available on all models (150).

FRANK G. HOUGH COMPANY will feature the model HM Payloader (151), both in the form of an electrically-operated scale model which simulates tip back and hydraulic bucket action, and in the form of the popular toy HM Payloader.

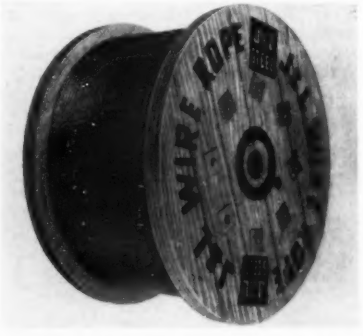


HUMPHREYS INVESTMENT COMPANY—The Humphreys spiral concentrator (152), which has no moving parts and uses no power in operation, will be shown in action with a typical –20 mesh feed as a closed circuit test unit. The concentrator, which has been known to handle 1,100 tons of feed per hour, is used on many different types of minerals. Fine ground material, usually –10 mesh, and water at 25 percent pulp density flows down the spiral channel of the modified semi-circulator section and the heavy minerals are drawn off through concentrate outlets on the inner side of the spiral, with the light mineral tailing being discharged at the bottom end of the spiral. The following engineers will represent the Humphreys company at the Congress: Merrill Welker, Whitman Brown, Henry Snedden and James V. Thompson.

INDEPENDENT PNEUMATIC TOOL COMPANY—A new jumbo (153), a portable unit for underground rock drilling, will make its first public appearance in this booth. The firm will also show a complete line of rock drills (154), allied air operated equipment such as sinker legs (155), stoper legs (156), pneumatic columns (157) and air bar feeds (158). Smaller pneumatic and electric tools suitable for maintenance work in the mines will be displayed too (159).

INGERSOLL-RAND COMPANY—This exhibit will be largely confined to recent developments in mining equipment, such as improvements in machines that expand the application and efficiency of jackleg drilling (160), accessories for deep-hole drilling (161), stopers and impact wrenches (162) for rock bolting, Carset jackbits (163) and lightweight drilling equipment for use with them (164), slusher hoists (165), centrifugal pumps (166) and Gyro-Flo rotary portable compressors (167).

INTERNATIONAL HARVESTER COMPANY—A movie illustrating the Service Supply Corporation's Lodover shovel working in various mining applications will be shown. (See Service Supply.) Other products to be placed before the mining industry include a model UD-9-A power unit cutaway diesel engine (168), an International TD-9 crawler tractor (169) equipped with a combination front end, an overhead service supply Lodover shovel (170) and a TD-24 crawler ("Big Red") with a bulldozer (171).



JONES AND LAUGHLIN STEEL CORPORATION—Wire rope (354) will be the most prominent feature of this showing, with case histories of outstanding service records being graphically displayed. Two different types of alloy will also be presented—Jalloy heat-treated, abrasion-resistant plate (180) and Otiscoloy, a mining steel (181). The latter is described as being particularly suited to the mininig industry because of its corrosion-resistant properties.

JOY MANUFACTURING COMPANY—New equipment for mechanized mining will be emphasized in this booth. Included will be mechanized rock drilling units (182), a diamond core drill (183)

designed to drill to depths of 3,500 feet, a diesel-electric shuttle car (184) for underground haulage, an airfeed leg (185) for lightweight drilling machines, two new slusher hoists (186) and a new reversible multipurpose hoist (187), and an axial-flow mine fan (188).

JEFFREY MANUFACTURING COMPANY will commemorate its 75th anniversary with an exhibit consisting of a 15-ton locomotive with cab (172), 1½-ton Trammer locomotive (storage battery) (173), 36 by 24-inch Armorplate swing hammer crusher (174), the intermediate section of a 36-inch belt conveyor (175), a midget blower (176), a 12-A-58 Aerodyne mine fan (177), electric vibrating pan feeders (178) and chains and pillow blocks (179).

KENNAMETAL, INCORPORATED—Three-point rock bits (189) and regular chisel bits (190) will be emphasized. In addition, approximately 20 different tool styles (191) that are used extensively through out the metal and nonmetallics industry (such as long-hole auger drilling with rotary equipment, robbing ore outcropping with heavy pronged tungsten-carbide bits and rock boring machines and use of special inserted twist steel with left-hand rotation drill rod for down drilling with hand hammers) will be demonstrated. E. H. Johnson will be in charge.

LAKE SHORE ENGINEERING COMPANY—A working model of the new Jeto bottom-dump skip (192), complete

with dump scrolls operating in a sketeton headframe with two skips in balance, will be on display. Demonstrating door closing and sealing arrangement (193) to insure water-tightness will be the end model of Lake Shore's Lohed mine car. A model of a cast iron base plate will also be shown (194).

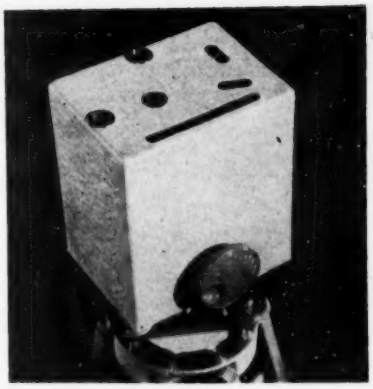
LE ROI COMPANY CLEVELAND ROCK DRILL DIVISION—Outstanding among the complete assortment of rock drills to be shown is the Le Roi Cleveland self levelling mine jumbo (195), designed so the 4-inch steel change Le Roi Cleveland HC23RW reverse air feed drifter can be used (196). The 6-inch steel change air shell model DR34 (197) can also be used on this jumbo or standard power feed drifter. Other features of the exhibit will be the telescopic jack leg (198) for the 45-pound H10 drill and the telescopic air feed leg stopers model S11St (199) for roof support drilling and stoper raise drilling.

A. LESCHEN AND SONS ROPE COMPANY'S exhibit will be easily spotted by an illuminated revolving reel of Hercules Red-Strand wire rope (200). On display will be samples of all types and constructions of wire rope (201) used in metal mining operations, including a section of 3-inch dragline rope. Various types of wire rope slings will also be available for close observation (202).

R. G. LE TOURNEAU, INC.—Three major products in this firm's equipment

line will be on display. They are the 50-ton rear dump Tournarocker (203) pulled by a 450-hp Super A Tournapull (204), the high-speed Super C Tournadozer (rubber-tired tractor) (205) powered by a 186-hp diesel with torque converter and packaged electric shift transmission, and the Tournamatic Tournapull (206) with P19 (16 cubic yards) Carryall, a self-propelled earthmover which strips, hauls and dumps its load. Continuous motion picture of equipment in action and equipment cutaways are included in exhibit. Stephen Czerwinski will be in charge.

E. J. LONGYEAR COMPANY—Diamond drilling equipment (211), borehole surveying instruments (212) and the new Arvela magnetometer (213) will be shown. The company's services to the



mining industry—manufacture of diamond drills and supplies, contract core drilling, shaft sinking and mine development, mining engineering and geological services—will be illustrated on display boards.

LINK-BELT COMPANY'S exhibit will emphasize the importance of belt conveyors for high or low capacity, long or short haulage of ores. An arrangement of belt conveyor troughing idlers (207)—standard, rubber-tread impact and belt training, and steel roll and rubber-tread return—will be shown. A double-deck 5 by 14-foot operating "CA" concentric action vibrating screen (208) of the floor-mounted type will also be exhibited. L. O. Millard, assistant general sales manager, will head the staff to be present.

LINK-BELT SPEEDER CORPORATION—Principal attraction will be an operating scale model of a two-yard, K-375 shovel-crane (209), operating with shovel and dragline attachments under simulated stripping and loading conditions. Photographic and back wall displays of L-B shovel-cranes (210), and their applications will also be included. D. W. Lehti, president, and other officials of the company will be present at the booth.

MARION POWER SHOVEL COMPANY will show only one item, its new Model 191-M power shovel (352), reportedly the largest of its kind in the world and designed for use particularly in the copper and iron mining industries. Movies and photographs of the 191-M will also be on hand.

Model of a 2-yard, K-375, Link-Belt Speeder Corporation shovel crane.

Unable to Attend?

Literature and information on the products displayed may be obtained by filling in the number appearing after each item of equipment on the Yellow PEP postcard in this section and mailing.

A miner is shown speaking on the Mine Safety Appliance Company's MinePhone.

MINE SAFETY APPLIANCES COMPANY—The MSA MinePhone communication system (214) and an FM carrier system (215) providing instant two-way voice communication will be the central attractions of this showing. The MinePhone permits instructions to be issued to individual vehicles while in motion. The Edison model R-4 electric cap lamp (216) and new developments in oxygen administering equipment (217), breathing apparatus (218), respirators (219) and first aid equipment (220), will also be demonstrated. D. F. McElhattan will be in charge of the exhibit.

MINE AND SMELTER SUPPLY COMPANY—Descriptive literature and pictures will be shown of Marcy ball and open-end rod mills (221), Wilfley concentrating tables (222), Massco-Grigsby rubber pinch valves (223), Massco-Adams density controller (224), rock bit grinder (225), laboratory crusher (226), McCool pulxerizer (227) and Burt filters (228).

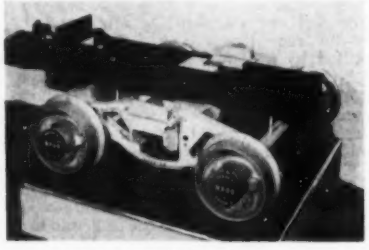
MINING WORLD—On display will be $100 in highgrade native gold to be awarded to the mining man who guesses most accurately the weight of a specimen of gold-bearing quartz ore. A second prize of $25 in unrefined silver will also be awarded. Conventioneers may also stop at the MW booth to rest tired feet, look at photos of some of the world's outstanding mining operations, and pick up a free copy of the September issue of MINING WORLD.

MORRIS MACHINE WORKS—The Type R slurry pump (341), latest in a line of pumps intended for handling abrasive liquids. Dismantling operations will be demonstrated on a 2-inch model. Other pumps in the Morris line (342) will be shown by photographs, models and bulletins.

MOSEBACH ELECTRIC AND SUPPLY COMPANY—A complete line of trolley wire materials (229), power rail bonds (230) and the Mesco shock absorber and brake adjuster (231) will be shown. New items to be displayed are coil wound resistance (232), resistance welders (233), choke coils (234) and signal bonds (235).

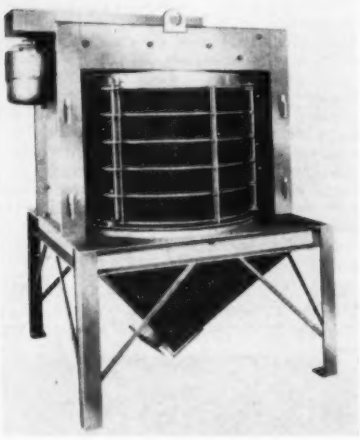
NORTHWEST ENGINEERING COMPANY will not exhibit any machinery at the convention, but instead will display numerous colored photographs.

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY—The NC-1 truck (236) for mine cars and the new reduced-size Willison automatic coupler (237) for small cars will be the featured



items in this exhibit. The company reports that this new smaller coupler makes available for low tonnage cars the safety and operational features of the larger Willison coupler. National will also show its steel pallets (238) (including various types of grate bars) for sintering machines, and steel ore grinding balls (239) from National's subsidiary, Rotary Steel Castings Company of Denver. Herbert H. Smith, sales manager of National's mine and mill division, will be in charge of the booth.

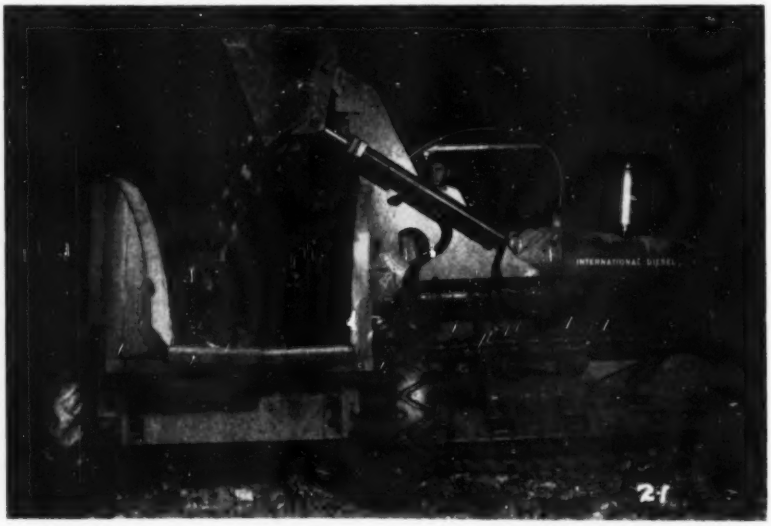
NORDBERG MANUFACTURING COMPANY—Use of centrifugal action instead of gravity has enabled this firm to produce a screen which is reportedly superior in screening light-weight materials. The apparatus, the Symons V screen (240), consists essentially of a screening surface in the form of a vertical cylinder or drum which is simultaneously rotated and gyrated. It will be shown in



conjunction with the Symons cone crusher (241).

OHIO BRASS COMPANY—Trolly wire fittings (242), materials for high-speed current collection (243), roof bolting materials (244) and fused trolley taps for protection of trailing cables (245) are among the varied products to be shown by this company. Roof bolting materials will include samples of the O-B roof support expansion shell and plug, O-B hole gage for determining bolt hole di-

Service Supply Corporation's Lodover will be one of many items on display.



ameters, and accessory equipment to increase the utility of roof bolt installations. J. H. Sanford, manager of the O-B mining sales division, will be in charge.

PIONEER ENGINEERING WORKS, INC.—Featured will be a one-fourth scale model crushing and screening plant in actual operation. The model, which weighs approximately 6,500 pounds, consists of a manganese steel feeder (246), size 4 by 12, feeding to a 2436 jaw crusher (247), a 40 by 22 triple roll crusher (248) and

a 4 by 12-inch two-deck vibrating screen (249), with two conveyors connecting the units. The jaw crusher is in open circuit, with the triple roll crusher and the screen in closed circuit.

RAYBESTOS-MANHATTAN, INC.—The Homocord conveyor belt (250), especially developed for the metal mining industry, will be the main attraction of this display of samples representing new developments in conveyor belt construction. An underground mining conveyor will also be shown in operation with a Manhattan conveyor belt (251). A. L. Hawk will be in charge of the R-M booth.

STEARNS MAGNETIC, INC.—A laboratory model of a ring type magnetic sep-

arator (261) will be the center of attention in this exhibit. Removal of tramp iron and heavy media recovery with Stearns magnetic equipment will also be demonstrated (262). Conventioneers are particularly invited to discuss operating problems with consultants who will be on hand.

ROCK BIT SALES AND SERVICE COMPANY—On exhibit for the first time will be long hole drilling tools (252) for drilling holes varying in depth from 20 to 150 feet with standard percussion type rock drills. In addition Rock Bit will show 4-point and chisel intra-set carbide tipped drill steel (253), detachable tungsten carbide Rok-Bits (254) in chisel or 4-point types, all types of hollow drill steel (255) and Holesavers (256). John Neamand will be in charge.

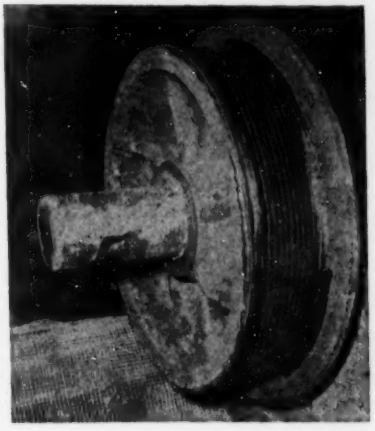
JOHN A. ROEBLING'S SONS COMPANY will show wire rope and electrical wire (257) used in mining of all kinds, to be used both underground and in open cuts.

SERVICE SUPPLY CORPORATION—The main feature of this exhibit is the underground Lodover (258), a combination overhead and front end loader mounted on the TD-9 International Harvester tractor. The advantages of this tractor are: No turning of the tractor at each bucket load, low overhead clearance, and no changeover necessary when it is to be used as a front end loader.

SIMPLEX WIRE AND CABLE COMPANY—The part that wire and cable plays in mining will be photographically portrayed by Simplex, exhibiting for the first time at the metal mining show. Various samples of Simplex products will also be shown (259).

SOUTHWESTERN ENGINEERING COMPANY—Tentative plans call for this firm to show an 18-inch model of its 4-foot vibrating screen (260). Numerous pictures and literature will be available to viewers.

STOODY COMPANY—Mining men will have the opportunity to watch various types of mining equipment being rebuilt



by automatic welding methods, using the Leader automatic welding machine (263). Worn parts rebuilt by both automatic and manual welding methods, as well as literature covering the uses of hard-facing alloys in the maintenance of mining equipment, will be on hand (264).

TIMKEN ROLLER BEARING COMPANY—Multi-use (343) and carbide (344) rock bits, metals used in the metal mining industry (345), alloy steel (346) and seamless steel tubing (347) will be

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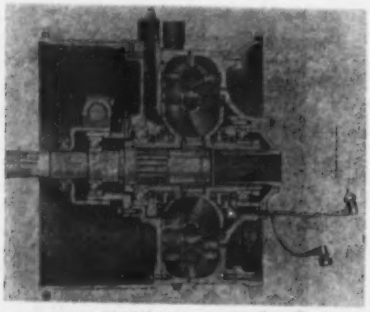
displayed. E. H. Austin, general manager of the service-sales division; George Humphrey, assistant general manager of service-sales; Peter Poss, assistant advertising manager; Ken Powers of the Kansas City branch; Joe Cornell and Bill Turner of the Seattle branch; and Larry Halderman of the Los Angeles office will attend the show.

TRAYLOR ENGINEERING AND MANUFACTURING COMPANY—Slides on a screen will be used to demonstrate the various types of machines manufactured by Traylor—jaw and gyratory crushers, rotary kilns, mining, milling, smelting and cement manufacturing machinery. Literature will be available on all products shown (265).

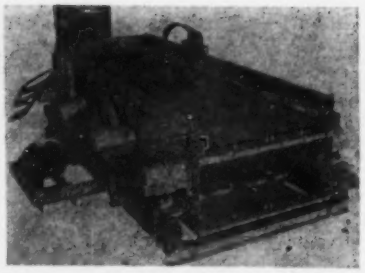
TWIN DISC CLUTCH COMPANY—Truck type torque converters (266) will be the central item in a display which includes hydraulic couplings used with belt



conveyors (267), power takeoffs in a wide variety of mining machinery (268), heavy duty clutches (269) and multiple disc clutches (270). Vu-Graph slides will illustrate application of all Twin Disc hydraulic and friction drives.

UNION WIRE ROPE CORPORATION—The Tuffy sling (275) will have its "anti-kink" qualities tested at the convention, where Union Wire Rope representatives will tie as tight a knot as possible in the sling, untie it, and show the undamaged condition of the rope. A full line of mining ropes will also be displayed (276).

THE W. S. TYLER COMPANY—The electrically-heated Ty-Rock screen (271), newest contribution of this firm to the screening of damp ores, will be the main feature of this exhibit. Samples of woven wire screens (272) of many different metals and meshes, as well as a Ro-Tap



testing sieve shaker (273) and Tyler standard screen scale testing sieves (274) will complete the Tyler exhibit.

UNITED STATES STEEL COMPANY—Three operating divisions—American Steel and Wire division, Columbia-Geneva Steel division and United States Steel company—will contribute products to this exhibit. A new engineering principle embodied in the Lotig Aligner (277) and three operating units is being shown for the first time. Other products to be displayed include wire rope (278), T-steel (279), Cor-Ten (280), Tri-Ten (281),

AR steel (282), Hadfield manganese (283), roll plate liners and liner bars (284), aerial tramways (285), mine rails and ties (286), rail bonds (287), floor plate (288) and corrugated roofing and siding (289).

VICTAULIC COMPANY OF AMERICA—Pipe couplings (291) ranging from ¾- through 60-inch pipe sizes head the list of products which Victaulic is showing. Also included are Full-Flow elbows (292), tees (293), reducers (294), fittings and plug valves (295), Vic-Groover pipe tools in ¾- to 6-inch sizes (296) and Roust-A-Bout pipe couplings (297) for plain end pipe applications. Other features of the exhibit will be new developments using the Vic-Groover tool with air motor drive (298), the adaption of a standard pipe and bolt machine for simultaneous cutting off and grooving of pipe ends (299), and a new Victaulic header arrangement with Victaulic plug valves (300). Operating units carrying air and water pressure will be used to demonstrate the Victaulic method of piping for all mine and mill pipe systems (301).

WAUKESHA MOTOR COMPANY plans to show three of its diesel engines, plus a Translite display showing various applications of Waukesha engines and power units. The smallest diesel engine to be shown is the Model 135-DKB (349), a high speed diesel with 4¼ by 5-inch bore and stroke and a 426 cubic inch displacement. Additional items to be exhibited include the Model 148-DK (350), which has a 5¼ by 6-inch bore and stroke and a 779 cubic inch displacement, and the Model 6-WAKDS (351), with a 6¼ by 6½-inch bore and stroke and a 1,197 cubic inch displacement. This last engine is turbocharged and equipped with Twin Disc torque converter. All the diesels feature the Waukesha diesel combustion chamber and American Bosch injection systems.

WESTERN MACHINERY COMPANY—Wemco products to be shown include an S-H classifier Fagergren flotation machine (303), a sandpump (304), a labora-

tory Fagergren flotation machine (305), a model of the new attrition machine (306) and a scale model of a heavy media unit employing a Wemco drum separator (307). Sales engineers will be on hand to answer questions.

continued on page 87

For Free Product Literature, see other side

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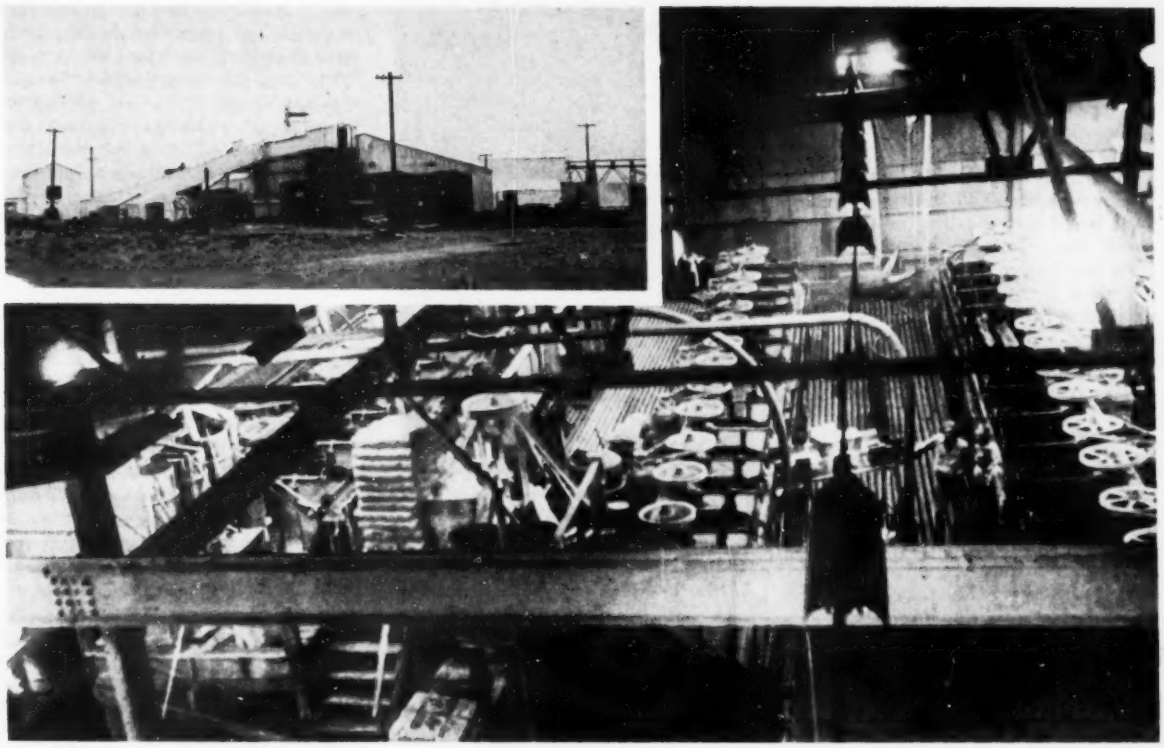


The zinc-lead flotation plant of the Peru Mining Company is adjacent to the Peruhill siding of the Atchison, Topeka and Santa Fe railroad four miles north of Deming, New Mexico. The unique "two-in-one" design of the mill allows separate treatment of dissimilar Pewabic and Kearney mine ores.

FLEXIBILITY IN ZINC MILLING

Peru Mining Company's Deming, New Mexico flotation mill treats two types of zinc ore from company mines and custom shippers in two parallel circuits

Following the trend of its long history of steady progress and expansion, the Peru Mining Company, one of New Mexico's most important zinc producers, is again enlarging its "two-in-one" zinc-lead mill. Starting as a 300-ton plant at Peruhill, a Santa Fe siding four miles north of Deming, Peru's mill was enlarged to 1,000 tons during World War II and the present addition will increase capacity by 25 percent to 1,250 tons per day.

Design For Flexibility

When enlarging the Peru mill, Joseph H. Taylor, vice president and general manager of Peru, and S. T. McBee, mill superintendent, used flexibility as the chief design criterion. The plant, they knew, would be required to handle the company's ores from the Pewabic and Kearney mines (see the August, 1952 issue of *Mining World*) in about equal tonnages as well as varying amounts of custom ore from the district.

The two Peru ores, though similar mineralogically and genetically, are sufficiently different in minor but important characteristics as to require specialized metallurgical treatment. The sphalerite contained in the Pewabic ore, for instance, is considerably more marmatitic than that in the Kearney ore and, consequently, produces a lower grade of zinc concentrate. Further, more careful control is required in the suppression of ferruginous gangue minerals.

Furthermore, since both ores contain relatively small amounts of lead—they are roughly equal in tenor with 6.0 percent zinc and 0.5 percent lead—recovery can be seriously affected by the addition of even minor amounts of lead-rich custom ores. Such additions to lead-lean Peru ores can easily double or triple overall lead content, requiring adjustments to the mill circuit. Custom ores, of course, vary considerably, but those of New Mexico's Central mining district treated at the Peru mill can generally be grouped with either Pewabic ore or Kearney ore according to the marmatitic sphalerite they contain.

Two-In-One

With these problems in mind, the most efficient treatment would be achieved with two separate circuits —one to handle Kearney ore and the other for Pewabic ore. This was the design followed and the present Peru mill is actually two complete and separate mills in one, with only the crushing, unloading, and concentrate loading sections common to both. Storage and flotation facilities are identical in the two circuits. Grinding circuits differ in that the

new addition to the mill includes a third grinding circuit in the Pewabic half of the plant. A sixth fine ore storage bin and a head pump were the other units added in the recent expansion.

Ores for the Peru mill are unloaded from the Peruhill spur of the Atchison, Topeka and Santa Fe railroad to a 150-ton coarse ore bin beneath the tracks. A Link-Belt 30-inch pan feeder draws ore from this bin to a 15 by 38 inch Pacific jaw crusher, in effect a secondary crusher, since Pewabic and Kearney ores are crushed to a minus-3-inches at the mine.

Material passing the jaw crusher is conveyed by a 24-inch belt to a 4 by 8 foot Deco-Dillon double deck vibrating screen operating in closed circuit with a 4-foot Symons short-head cone crusher. The upper deck of the screen has square openings of 1¼ inches to pass a coarse fraction directly to the cone and thus prevent blinding on the lower deck, a screen with ⅜ by 2 inch openings. Oversize on the second screen passes to the cone to be crushed with the coarser material and returned to the conveyor for a second screening.

Ore passing the finer screen drops to a 20-inch belt for transfer to one of the six 250-ton fine ore bins used for temporary storage in the mill. As the crushed ore drops from the feed belt to the transverse bin-loading conveyor, it is sampled by a unit designed and installed by the management and approved by the Metals Reserve Company during World War II. The stream of fine ore is periodically cut by a chain-carried bucket that dumps its load in a double Johnson splitter. The retained quarter of the original sample is conveyed to a laboratory-size crusher for reduction before being transferred to the plant assay office. This unit not only enables Peru to keep a close check on production from the Pewabic and Kearney, but, when combined with the results of car sampling, also allows an accurate check on the value of custom ores.

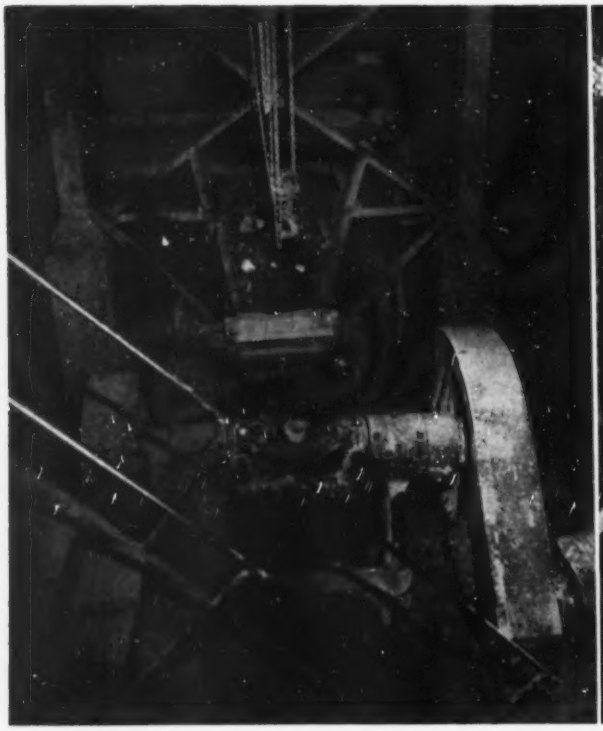
Joseph H. Taylor
Vice-President and General Manager
Peru Mining Company

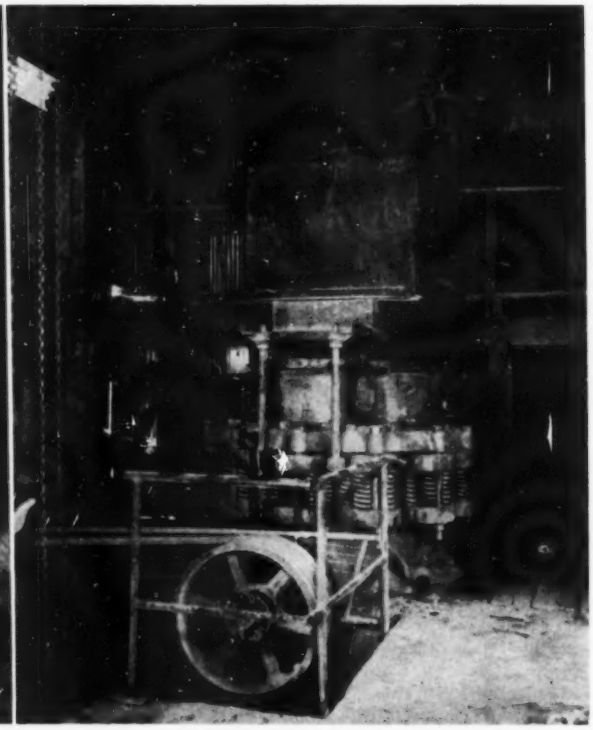
Pewabic and Kearney ores are not combined in the crushing system but are run alternately and stored in one of three fine ore bins designated for each. From this point, the two ores are treated by entirely separate sections which are, with a single exception, identical.

New Grinding Section

Each grinding circuit—there are three in the Pewabic section and two in the Kearney—has a 60-inch Wemco SH classifier operating in closed circuit with a 6 by 6 foot Marcy ball mill using 3-inch Sheffield balls at the rate of 0.8 pounds per ton of feed. Conditioning for lead flotation takes place in the grinding circuit by the addition of cyanide; 0.05 pounds per ton of feed; and zinc sulphate, 0.15 pounds per ton, as depressants. A Dow xanthate, Z-6, is added as a collector at the rate of 0.02 pounds per ton between the grinding and flotation circuits. At the same point, 0.10

LEFT: All ores—from the Kearney, Pewabic, and other mines—are unloaded and fed separately to this Pacific jaw crusher, allowing separate concentration. RIGHT: A double-deck screen, operating in closed circuit with this Symons cone crusher, removes a coarse fraction from crushed ore to prevent blinding on the second deck.





pounds of pine oil per ton of feed is introduced for frothing.

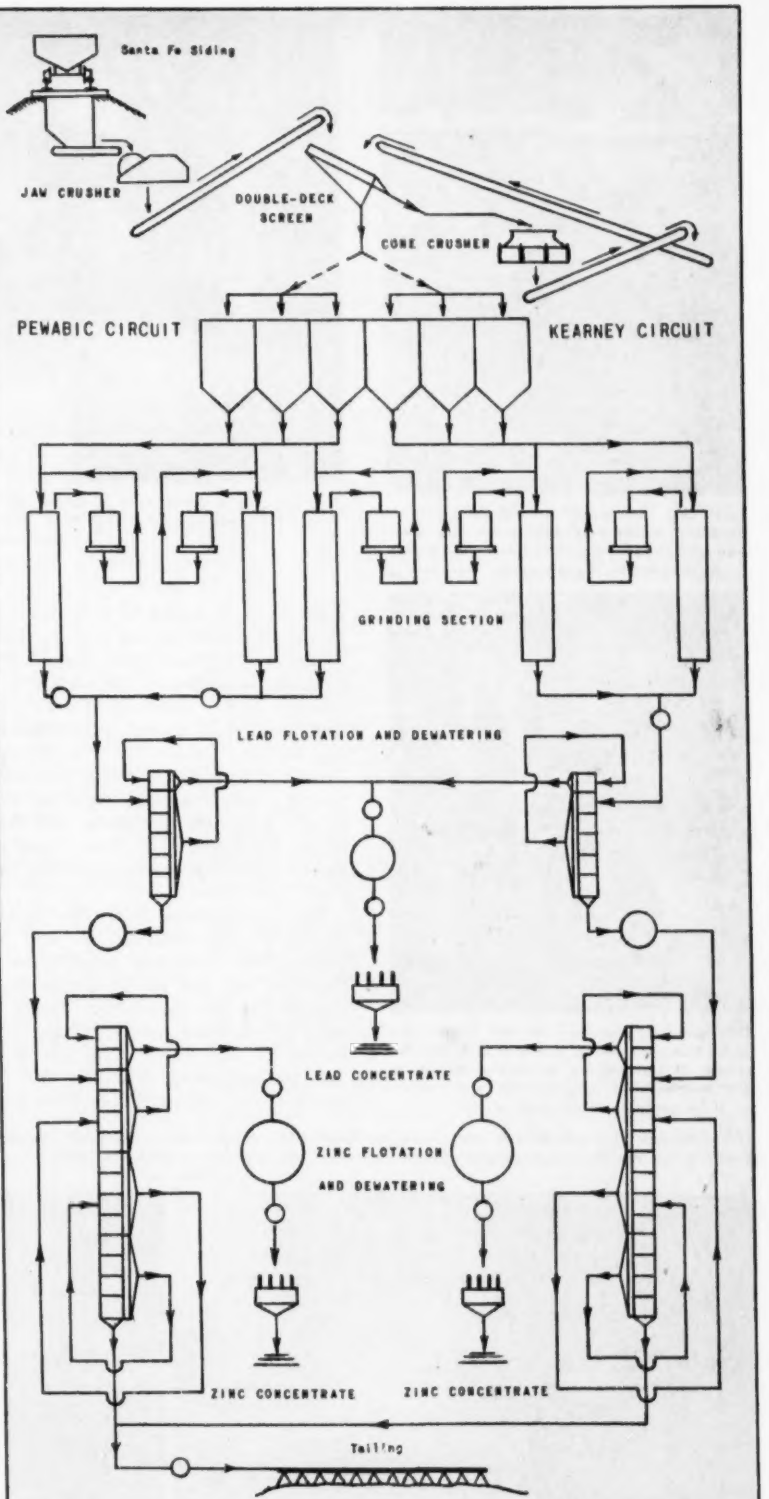
The conditioned pulp is fed to the second cell (a Deco #24 Sub-A unit, as are all of the flotation cells used in the Peru mill) of the six-cell lead circuit and in this and the succeeding four cells, is separated into a rougher concentrate and tailing. Rougher concentrate is passed to the first cell for cleaning. Tailing from the first cell passes to the second cell to be re-run through the rougher section.

After conditioning in a 8 by 8 foot tank with 3.0 pounds of lime and 1.0 pound of copper sulphate per ton of feed to suppress gangue minerals, 0.05 pounds of Z-6 as collector, and 0.10 pounds of pine oil as frother, tailing from the lead circuit passes to the third cell in the 14-cell zinc flotation section. The cells of this section are divided into four groups; the first two cells are for final concentrate cleaning, the next four cells for roughing, the second group of four cells for preliminary scavenging and the last four for final scavenging. Concentrate from each of these groups is returned to the next to the last cell in the preceding group. Tailing flows continuously through the circuit from the first to the last cell. The reagents consumptions as listed are typical, but are changed from hour to hour with ore changes.

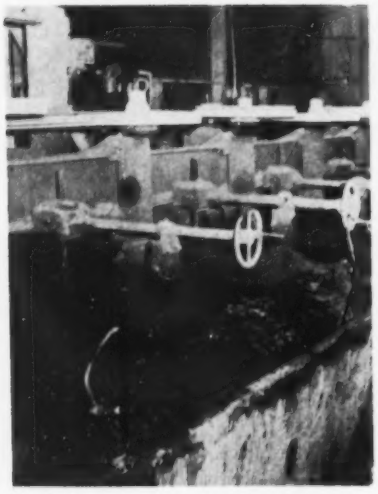
Concentrate Loading

The final zinc concentrate—a product of the first two cells in the circuit—is transferred by a 4-inch Wilfley pump to a 20 by 10 foot Dorr thickener and then by a 6-inch Deco diaphragm pump to a 6-foot, 4-leaf Eimco disc filter for final dewatering. From the concentrate bin into which it drops, the filter cake is transferred by portable conveyor to a Stephens-Adamson spinner for even distribution in the Santa Fe railroad cars that carry it to either the Dumas, Texas, smelter of the American Zinc Company of Illinois or the Little Rock, Arkansas, plant of the Athletic Mining and Smelting Company.

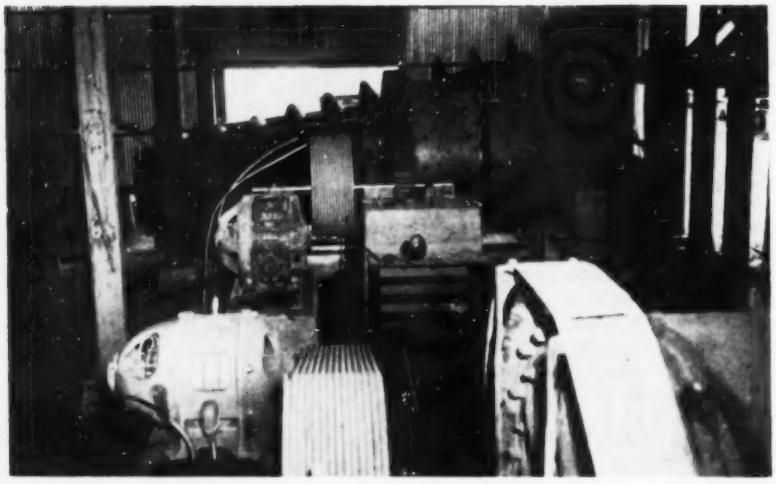
Though zinc concentrates from the two circuits are not combined at any point because of their different metal content, lead concentrates are relatively the same and do not require separate facilities for dewatering. This is the single exception to the separation of the circuits. Lead concentrates from both the Pewabic and Kearney sections are combined and pumped by a 3-inch Wilfley to a 10 by 20 foot Dorr thickener and then by a 4-inch Dorr diaphragm pump to a 6-foot, 4-leaf Eimco disc filter. Here the filtered



PERU MILL FLOWSHEET



Final zinc concentrate from Kearney ore is produced at the Peru mill in the two flotation cells shown here. Pewabic ore is handled in a separate, though similar, section.



Four grinding sections, each consisting of a Marcy ball mill and a Wemco classifier, formerly handled all ore treated in the Peru mill before a recent expansion program added a fifth, the section shown here.

This sampler, approved by the Metals Reserve Company during World War II, cuts the stream of crushed ore, splits the sample to one quarter of its original size, and crushes it for assaying in the plant laboratory.

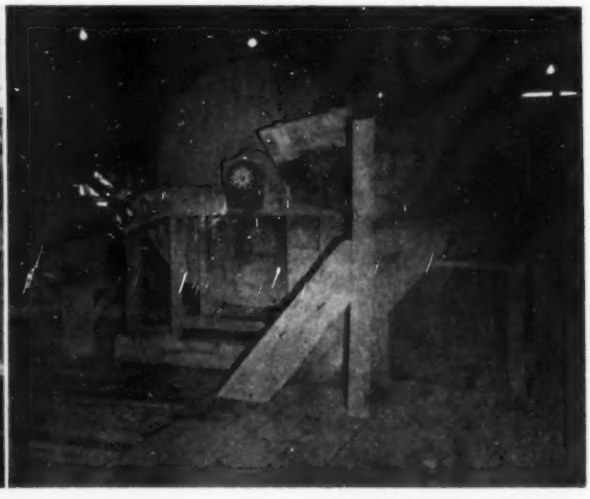
product is dropped to a temporary storage bin next to the two zinc bins along the railroad spur. Lead concentrate is loaded in rail cars with a model H-A "Payloader"—a unit that, according to mill superintendent McBee, "is used for everything" around the plant: spotting box cars, pouring concrete, hauling pipe, and so on. American Smelting and Refining Company's El Paso Smelter receives the lead concentrate for the final treatment.

Zinc concentrate from the Kearney ore runs between 56 and 57 percent zinc and 0.05 percent lead. Pewabic ore, due to the higher iron content of its sphalerite, yields a zinc concentrate that averages between 52 and 53 percent zinc and 0.05 percent lead. Though the 60 percent lead concentrates produced have up to 12 percent zinc, the overall recovery of zinc as zinc concentrate from the two ores approaches 90 percent.

Tailings from the two mill sections are combined and pumped by a 5-inch diaphragm unit to a trestled trough. The material, dumped beneath the trestle, drains quickly, forming a vast, dry surface dump without need of dams or retaining walls.

To supply the water necessary for mill operation, a 300-foot well was dug near the plant site. Water now stands about 100 feet below the surface and removal of the 500 gallons per minute required has not lowered this level. Pumping facilities have a capacity of 1,000 gallons per minute and therefore operate only 12 hours a day.

LEFT: The two zinc concentrates are alternately loaded into boxcars by a portable conveyor feeding a Stephens-Adamson spinner. RIGHT: Eimco 4-leaf disc filters are used to dewater the two zinc concentrates and one lead concentrate produced by the two separate sections of the Peru mill.



MINING INDUSTRY SPOKESMEN GIVE THEIR VIEWS ON "PALEY REPORT"

The report of the President's Materials Policy Commission, *Resources For Freedom*, has now been popularly termed the Paley Report. The August issue of *Mining World* gave the highlights of the Report's findings and forecasts, and the mineral recommendations. It is not surprising that leaders in the domestic mining industry have studied the report with great interest. Industry spokesmen herewith present their views of the Report and its recommendations.—Ed.

John E. Kelly

John E. Kelly, Consultant in Natural Resources, Washington 5, D.C., reports that: A strong domestic mining industry is essential to national security. It is regrettable that in its recent report *Resources for Freedom*, the President's Materials Policy Commission did not keep that axiom continuously in mind. Had it done so, its 800-odd pages of findings and conclusions would have been less vulnerable to criticism, more useful as a guide to the nation's future mineral policy.

The Commission appears to have been influenced in part by two fallacies widespread in recent years. Internationalism is currently in vogue, along with the outpouring of billions of United States taxpayers' money to finance schemes and prospects, as long as they are foreign. "Patriotism" has become almost a smear word; enterprises like domestic mining are hogtied with red tape, controls and restrictions, while know-how, machinery and money are lavished upon overseas mines. Tariffs are abolished or suspended on mineral imports—and then the stockpilers pay the foreign mines prices in excess of domestic price ceilings. United States miners seeking to develop and market mercury, manganese, and other ores found themselves confronted by an iron curtain of official policy, covertly or openly favoring their foreign competitors. To drum up voters' support of the export of Government funds, "Have Not" propaganda is bellowed from Federal rostrums.

Risky Reliance On Foreign Mines

We are told with increasing frequency by both Congressional and Defense authorities that incredible as it may seem, the United States is losing the armament race to our Russian antagonists. It has been officially disclosed that the Reds possess exceeding 300 new submarines, designed by German scientists with the most modern devices, and embodying advanced propulsive and detonating mechanisms. This is a number stated to surpass the combined total of submarines of equal striking power possessed by the Free Nations which, moreover, must deploy their vessels widely in defense of trade routes and ports while the enemy, integrated on his immense land mass, may concentrate his efforts on attack. What profits national defense from foreign mines, of clear title and pure metal tho they be, if the seas between are held by a hostile power? In World War II, when the Germans possessed a much inferior submarine force to the reported present Soviet fleet, over 80 ore carriers were sunk in the Caribbean alone, at our very door. The new mineral picture, as presented by the Paley Commission, shows vital defense supplies drawn from India, Africa, Indonesia, the Far East, and Oceania, as well as South American exports deliverable only by ocean transport. It seems therefore risky in the extreme to place our main reliance upon foreign mines.

Proponents of favor to foreign mines attempt to parapet themselves behind the argument of the stockpile. We are not at war—yet—they say, and have time to assemble sufficient supplies from the overseas deposits so that if enemy action cuts the sea lanes, our essential industry can maintain operations. The trouble with this argument is that no stockpile has ever proven large enough for the needs of an embattled nation. The Germans, masters of detail and pioneers in synthetics, amassed stockpiles for years in advance of World Wars I and II, calculated sufficient to outlast any conflict. The principal cause of their defeats was exhaustion of imported raw materials. In our own history, the besieged Confederate States were starved of material necessities by the blockading Federal fleet.

If we are not yet in a state of war, neither are the great majority of the potential overseas mineral beneficiaries of the Paley Commission's recommendations in production. Many of them, and quite naturally, are deposits of such intrinsic obstacles (excessive overburden, complex metallurgy, climate, great distance from existing routes of communication, etc.) that private capital declined their exploitation. Even with budgets and schedules disregarded, to bring such properties into production may require from four to 10 years, an eternity in these days of sneak attack and lightning war.

Nationalism Spreads

Nor are the hindrances to foreign supply of America's mineral needs limited to time and physical obstacles. The rising spirit of nationalism threatens to cut off shipments from an increasing area of the world—outside of the Soviet bloc. Foreign petroleum companies have been ejected from Iran, involving a loss of hundreds of millions of dollars in plant and the largest non-United States production. The lethally successful coup tempts other authorities along the Persian Gulf to emulation.

The evil example spreads. A West African Republic that signed a contract in 1949 under which a United States company is constructing a railway and exporting iron ore, now presents astronomical demands: 50 percent of the profits, sales at the "world price" instead of by royalty as contracted, shareholder and director representation. There is no limit to such acquisitiveness. Grant today's demands, and native nationalism will return tomorrow for a 75 percent, 90 per cent share, confident that its nuisance value in the United Nations Assembly gags effectual United States protest. The visible end of such tendency is nationalization of the mines, socialistic management leading to abandonment, loss of Uncle Sam's investment.

Precedent for such action exists even in the "New World." The new government of perennially revolution-torn Bolivia proposes to seize the tin mines, whose production, vital to U.S. industry, is largely financed by American shareholders.

If realistically administered, foreign ore purchases for stockpile purposes are desirable—as a supplement to domestic production. But with their absolute uncertainty of continuity of supply, as mentioned above, they cannot replace our domestic industry as the principal mineral bulwark of national defense.

"Have Not" Half Truths

The "Have Not" argument rests upon half truths. The reading public learns that we "have only two years supply of manganese, three years at best of mercury," etc., and is panicked into supporting overseas ventures while writing off domestic mines as empty holes useful merely for raising mushrooms or storing documents against atomic raids. Rarely does the average layman understand, and the "Have Not" propagandists scarcely emphasize, that their chilling figures represent only DEVELOPED ORE, ready for blasting and shipment to the mill. It would be an extravagant management that would develop ore many years ahead of production, tho the mine might possess a century of operating expectancy. Premature development expense could cut heavily into net earnings. Even more important, developed ore becomes taxable, while yet in place in the mine, tho it adds nothing to profits.

The fallacy of these "dwindling reserve" figures becomes clear when as has repeatedly occurred the "Have Not" tonnage is mined and the mines continue in full operation.

The "Have Not" measure would produce scarce headlines of imminent starvation in New York, for the metropolis rarely possesses food supplies in excess of 24 hours' consumption. Figures for developed ore should be treated as an inventory item, whereupon they will be seen in their true perspective as normal and satisfactory.

Equivalent conditions prevail over huge areas of the West and the Appalachians. The next frontier for domestic mining, paced by petroleum and sulphur exploration, is downward to tap the deep deposits.

Incentive is required for production, in mining as well as in other industry. There was little stimulus to develop domestic manganese deposits and beneficiation methods in the face of official preference for foreign sources. There is small spur to open new domestic copper properties when alien mines, with much lower costs, are paid higher prices by the stockpilers. Thorium was known in North Carolina since the 1890's, uranium in the Colorado Plateau, zircon in the Florida beaches, for many years, but lacking markets, incentive to prospect and develop did not exist. Show the miner a fair market and he needs no government favor.

Domestic Mining Should Be First

The Commission's predisposition toward the international viewpoint is set forth early in the five-volume report. "There is no such thing," it pontificates, "as a purely domestic policy toward materials that all the world must have; there are only world policies that have domestic aspects." This is putting the legendary cart before the horse with a vengeance! The United States is the keystone of the free world. If this country fails to survive a hostile attack because of a "world policy" favoring foreign mines and rigging metal markets in their favor until the domestic industry sinks into ghost status, the rest of the globe will fall to communism like a ripe plum at harvest time. National policy dictates the placing of domestic mining on a sound basis first; it will be time enough thereafter to expend surplus energy and funds, if any, upon development of contingent sources of supply.

The Commission does not assume toward United States mining the attitude exemplified by the infamous Order L-208 of World War II, from whose effects the gold mines still suffer, but subtly it would constrict and circumscribe domestic effort. It advocates for the traditional mining claim a complicated leasing system, giving the operator an apparent greater flexibility but no real title. It is all too reminiscent of the maneuvers of "Honest Harold" Ickes to reduce mine operators on the public domain to the status of tenants at will.

Depletion Would Be Restricted

The Report has received favorable publicity because of its advocacy of retention of percentage depletion in tax determination. But closer reading reveals the Com-

FAR REACHING IMPLICATIONS OF THE REPORT —

FOR THE PROSPECTOR. Restrictions, government regulations, and increased assessment and patenting costs could well mean the end of the greatest ore finder.

FOR THE LARGE MINE OPERATOR. Regulation of production could be effected through quotas, international buffer stocks, and multilateral contracts.

mission's consistent policy of fencing in the domestic mining industry. In saying that rates now provided in the Internal Revenue Code should not be raised higher, the Commission invades the Legislative sanctum and simultaneously sets up as a clairvoyant. If taxes go higher, percentage depletion must be raised accordingly, or many operators could not break even. Likewise, the Commission would cut down the list of minerals admitted to depletion. It recommends that the Congress reconsider the additions made in 1951. The restriction cat really pops out of the Commission's bag in the following passage:

"Application of the percentage depletion device should be confined to those minerals for which the hazards of exploration are great; a principle that apparently did not govern selection of most of the minerals added to the percentage depletion list by the Revenue Act of 1951."

The above comment (ignoring the basic fact that all mining deals with wasting assets requiring the setting up of depletion reserves if the operating companies are to survive their instantly exploited lodes) calls attention to the fact that but one of the five Commissioners is a mining man. Strict adherence to the quoted recommendation would eliminate coal from the percentage depletion list. The result would be seen in the increased operating cost of every coal-fired boiler in America, causing, by the chain-reaction of costs from raw material producer to end-product consumer, vastly more expense to the national economy than any additional taxes extracted from the already too-heavily burdened coal industry.

The Paley Commission's partisanship toward foreign mineral deposits is refreshingly countered by the Fulbright Subcommittee of the Joint Committee on Defense Production. In Progress Report No. 20 (June 1952) relating to the aluminum expansion program, the Subcommittee enunciates the sound doctrine that no strategic metal should be purchased abroad if it can be produced at home.

Beyond The Submarine Curtain

The Paley Commissioners seek repeal of the "Buy American" clause, considering it a relic of "depression psychology." That clause is no antique, it is brand new, since by extra-legal dictum of the President, it has hardly been used.

The Report calls attempts to secure self-sufficiency "economic nonsense." As much nonsense as betting our wartime salvation on untried mines located beyond the submarine curtain?

Felix E. Wormser

Felix E. Wormser, Vice President, St. Joseph Lead Company, New York, New York, says that: The voluminous report of the President's Materials Policy Commission appears at a time of great national prosperity, and, under certain assumptions of industrial growth, paints a picture of serious prospective metal and mineral shortages. We have had similar alarms in the past, especially in oil. I might add that the St. Joseph Lead Company's study on lead does not confirm the Commission's analysis or forecast. The report makes many constructive recommendations, such as changes in our tax laws which, if carried out by Congress, would indeed stimulate mining in the United States and postpone some of the unpleasant events predicted by the Commission.

Freedom Not In Recommendations

The report professes to endorse the system of free enterprise under which our country has shown remarkable growth. It is, however, extremely difficult to reconcile this declaration for freedom with some of the recommendations made for the mining industry, such as the adoption of multilateral contracts with other countries, like the International Wheat Agreement. The International Wheat Agreement has cost the taxpayers of the United States about $600,000,000 since 1949, through the purchase of wheat in the domestic market, at the market price, selling it abroad at lower prices, and compensating the farmer for the difference. It has cost the Canadian farmer some $135,000,000, as he hasn't been subsidized.

The Commission also recommends the establishment of international buffer stocks, a device which would sharply interfere with international trade resembling closely the cartels our own government strongly condemns.

The Commission also recommends quotas, another tool of the "planners," and exemplified by our recent experience with the International Materials Conference, an agency which decides how much copper, sulphur and other metals and minerals we shall be permitted to use. In other words, there would be drastic interference with

FOR THE UNITED STATES MINER. Tariff removals would put the highly skilled United States miner in direct competition with these unskilled natives of Africa.

FOR THE SMALL MINE OPERATOR. Shifts to foreign production would necessitate closing of many of the nation's small mines.

the channels of international trade and the free market, if the controls recommended by the Commission were adopted. I don't believe any international group can reconcile conflicting economic national interests and function better than the free market. All history is against it.

Tariffs vs Full Employment

The Commission also recommends the elimination of tariffs on nonferrous metals. One of the principal reasons given for free trade is the contention that the United States has adopted the principle of full employment. Hence, tariff protection is no longer needed to safeguard miners' jobs. This, perhaps, is an indication of the fundamental thinking behind the President's Materials Policy Commission report. Full employment is the ingenious conception of the Keynesian school of economics so popular in socialist Britain. Russia, of course, has full employment. How can anyone be so heartless as to oppose full employment? Unhappily, full employment means the surrender to the government of precious freedoms, in exchange for security. I doubt very much Americans are willing to forego their precious liberties if the issue is clearly presented to them. Government coercion can bring about full employment, but I believe the average miner prefers freedom to make his own future.

John A. Wood

John A. Wood, President, New Mexico Mining Association, Albuquerque, New Mexico, started his review by speaking about taxes. He commented: The Commission recommends retention of percentage depletion at existing rates; and it is commendable that the importance of depletion allowance has been thus recognized. However, it is my opinion that if certain increases in these rates were to be allowed, the industry would substantially increase the order of magnitude of exploration for domestic minerals. Suggested rates are: metals, 25 percent; nonmetals, 25 percent; sulphur, 25 percent; mineral aggregates, 15 percent; and coal, 15 percent. Rates should be based entirely on gross income.

Revision of Mining Statutes

1. That no extralateral rights should be acquired with future claims or patents. *Comment:* The principle of extralateral rights is a device to protect the claim locator against adverse changes in dip which might not be inferred from lode outcrops and should be retained in the statutes.

2. That the annual requirement for improvement of unpatented claims should be increased to $250. *Comment:* It is entirely unfair to prospectors and small operators to require an increase in the dollar value of annual expenditure. For that matter, setting any dollar value at all is highly impractical and has proved so in the past. Annual improvement should be defined in terms of volume of material in place removed from the ground. The purpose of annual improvement upon an unpatented claim should be to require the locator to demonstrate faith in his discovery by continuing to search for valuable material.

3. That the improvement requirement for granting patent should be increased to $1,250. *Comment:* Here again an injustice would be worked upon the small operator by more than doubling the expenditure required to patent a claim. More important than setting a value on improvements for patent, in my opinion, is conclusive demonstration by the claim owner that the ground he desires to patent has yielded mineral of commercial value prior to the date of patent application.

4. That the Department of Interior should be authorized to invalidate claims upon showing that the deposits discovered are insufficient to justify further development of the claim as mining property. *Comment:* Really now, would you care to have such an arbitrary decision rendered at the bottom of your first 10 foot hole?

All in all, the authors of the Paley Report must be highly commended for their thought provoking analysis of the United States' raw materials position. They have placed a great reliance on continued advances in technology to provide increasing utilization of more dilute concentrations of minerals, which would ultimately make possible the complete re-cycling of many materials and thus afford an inexhaustible supply.

The United States mineral industry can do a magnificent job here at home if it gets really favorable treatment.

William M. Stoll, Mining Engineer, Seattle, Washington, reviews the report as follows: The report purports to be a minerals policy guide, and is doubtless intended to and probably will have great influence in future legislation concerning mining and minerals policy. Certain of the ideas advanced deserve close scrutiny by mining people as to their impairment of freedom.

Certain ideas advanced by the report appear to follow closely—too closely—ideas that have been advanced formerly by the United States Department of the Interior. These ideas have had in common the tendency to diminish or destroy the independence of prospectors and mining people and to generally tear down the traditional rules they have long operated under.

Same Leasing Scheme—New Approach

For years the Interior Department has been attempting to extend the government leasing system to metalliferous deposits, to collect vast data on who is doing what, grant permits, and generally assume a position of management over exploration, development and mining activities. The Paley Commission's report is an ideal vehicle by which they may achieve their objectives, unless Congress is wary. The report proposes that leasing be made optional, as an alternate to the traditional rights of location and patent. Thus their approach is now more cautious, having earlier run into trouble when the Interior Department sent up a trial balloon on the same matter.

Evidently the Bureau of Land Management does not care for the mining customs and laws that have grown up in the United States as a result of practical experience since 1849. This spirit reflects a relentless urge to control and centralize, to manage and to dominate—whereas the traditional laws and customs leave the essential elements of freedom and decision to the miner. That is where it belongs, since it is he who risks his time and work. The report goes further than this; it proposes that all new claims be invalid unless recorded in the central temple of authority and largesse. It also has the temerity to propose that the current Interior Department regulation permitting its examiners to deny sufficient showing for patent *be extended to include the final power to invalidate claims on which the Department decides development is not justified.* Those experienced in mining geology and examination will know this for an unjustified and cruel power, if it is ever granted by Congress.

These proposals, if enacted into law, would destroy the spirit and the letter of United States mining law, as it has been built up and come to be accepted by thousands of mining people—from mining companies to prospector.

Muriel Sibell Wolle Describes

WALDORF IN THE ARGENTINE DISTRICT

Few persons today reach the tops of McClellan or Leavenworth mountains, towering above Georgetown, Colorado, to visit the ghost town of Waldorf and the properties of several once important mines. The narrow road which switchbacks up the mountainside above Georgetown, attracts more fishermen en route to Green and Clear lakes than miners bound for the 11,000-foot-high camp.

The road winds over this tundra until it reaches a group of dilapidated buildings lining a street, which ends at a mine adit. A sign tacked to the largest false-fronted store reads "11,666 feet elev."; most of the gaping shacks stretch on either side of the one main street or road; a few perch above or below it on the mountainside. On beyond and above the town, the old Argentine Pass road leads out of sight around the shoulder of the peak, and down into the Snake River district. Once the main wagon and pack train thoroughfare to the Snake and Breckenridge country, it is now a narrow, almost forgotten, trail.

Prospectors had crawled over the steep mountainsides below the pass for years and had located many claims in the Argentine district, but the main period of mine discovery and development was the late 1890's. The town of Waldorf did not materialize until the early 1900's.

According to mining reports, there were about 80 veins in the main group of claims belonging to the Waldorf Mining and Milling Company, but only nine were worked extensively. These mines produced ore valued at over $4,000,000, but much ore remained underground. Consequently, the Wilcox Tunnel was driven through McClellan Mountain in 1900 to cut the Commonwealth and other known veins. Most of the ore was silver, but some gold was found in the Independence, Bullion and Mendham mines. The Stevens, which was one of the big producers in the early days, was also tapped by this tunnel and its ore brought out at Waldorf.

The Commonwealth, one of the best producers of early days, revealed a good strike in 1902, and, since hundreds of tons of ore rich in gold, silver, and copper were also in sight in the Waldorf property, the east Argentine district was said to be 'coming to the front.' Two hundred men were working in the mines, all the houses were full, and boarding and rooming houses were filled to capacity. By 1906 the Waldorf Mining and Milling Company was the district's largest shipper; even as late as 1915 a large force of men were working the best mines held by the company.

Simultaneous with the development of the the Waldorf group of mines was that of the Santiago group. According to an account appearing in the *Georgetown Courier* on June 29, 1935, the Santiago vein was discovered in the fall of 1898 by Charles Carlson, an old prospector, (although some authorities give 1895 as the discovery date.) Carlson did not record his discovery nor stake it, and when he found that William Rogers was also prospecting in the same area, he told Rogers he was not going to stake the Santiago and if Rogers wanted it he could have it.

Rogers promptly staked the claim and recorded it. He began developing the lode, and by the summer of 1900 shipped "a large tonnage of ore worth $65 to $80 a ton from a vein four feet wide." By the following spring, additional gold, silver and lead ores were uncovered by three adits which were driven to the lode.

To facilitate the shipment of the ore, a tramway was built from the face of the perpendicular cliff in which the veins lay, down to the high mountain meadow. The ore was then sacked and packed to Georgetown. During the summer of 1901, a boarding house, stables, machine shops, and miners' cabins were built near the lower terminus of the tram. Around these buildings, the town of Waldorf grew up.

Within a few years, William Rogers (who was still managing the Santiago property) sold his controlling interest in the consolidated company for $50,000 to the Santiago Montezuma Development Company, which was backed by New York capitalists. Under their management large scale development of the properties began. Still later, the property was developed successfully by lessees.

Th most colorful character connected with Waldorf was Edward John Wilcox, who reached the Argentine district in 1900. Wilcox came to Colorado from Ontario, Canada upon hearing of the silver strikes in the state. He reached Breckenridge in 1880 and walked from there all the way to Montezuma and the Cashier mine, where he obtained work sorting ore. From the first, mining fascinated him, and, in addition to his job, he developed a claim which he located near his work. So as to know more about mining, he attended the Colorado School of Mines at Golden between 1881 and 1883, but, after a few years, another interest claimed him and he became a Methodist minister. He preached in several Colorado towns but mining was in his blood and after six years he voluntarily returned to the hills. When asked why he did so, he explained that he could make more money to use for the church by mining than by preaching, and that he thought he could therefore do more good as a miner than as a minister.

He sold his claims near Idaho Springs for $200,000 and went to the upper Ar-

The ghost town of Waldorf, Colorado, with Argentine Pass in the background.

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gentine where he began to invest in mining properties, including the Waldorf mine and mill. His next project was the development of the Wilcox Tunnel, which was driven into the mountain to cut the veins of several of the district's best producers. In time this tunnel passed into other hands but by then Wilcox was busy building a mine railway.

Now that he owned 65 mines on a mountain top, Wilcox decided to build his own road—the Argentine Central Railway—to convey the ores from the mines at Waldorf to the Colorado and Southern Railroad terminus at Silver Plume. Work on the road began in August 1905. A year later it was completed.

The road was 15.9 miles long and switchbacked up the north slope of Leavenworth Mountain from Silver Plume. It then crossed the shoulder of the mountain to the town of Waldorf. From there, spurs were built to the various shipping mines on the summit of the peak. The grade was so steep, averaging four to eight percent all the way, that it necessitated special engines, which were equipped to haul the heavily loaded cars up the grade.

While the road was built for mining purposes, on Saturdays and even during the week it ran popular excursion trips for tourists. Some 15,000 to 20,000 sightseers made the trip each year, thrilled by the hair raising ride, the superb aerial views of Silver Plume and Georgetown, and the sight of Moon Evans, Gray's and Torrey's peaks, visible from the summit of Mount McClellan.

When A. D. Parker, vice-president of the Colorado and Southern Railroad, assured Wilcox that the week-end excursions would make money for the railway and that Sundays would bring in the heaviest receipts Wilcox replied, "There will be no Sunday trips. I have a partner in my business and He is the Lord."

A typical excursion trip left Denver on the C. & S. at 8:00 a.m., reached Silver Plume at 11:30 a.m. and then made the pull up the mountain to Waldorf where a stop was made for lunch. The final two miles to the summit was a series of switchbacks. One stop was made at the abandoned Johnson Tunnel, where curious ice formations, illuminated by colored lights, always fascinated the tourists.

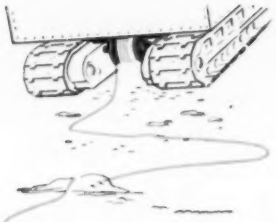
The 14,007-foot summit provided a magnificient view of the range, and after a 30-minute stop on top, the return trip began, arriving at the Plume in time to connect with the afternoon train back to Denver. Moonlight excursions were also a feature of the road and were even more popular than the day trips. On one occasion Governor Buchtel of Colorado and 400 guests made the trip.

The Argentine Central cost Wilcox $300,000 to construct; so sure was he that it and the mines it served would produce a fortune that he refused an offer of $3,000,000 for control of the mines and the road by an English company, saying that the bid was too low. In 1907, six months after the offer was made, the financial panic caused the price of silver to drop and Wilcox found himself $700,000 in debt. In June 1909 he sold the road for $44,000 and seven years later, after a prodigious amount of work, he paid off the remainder of his indebtedness. The railway was purchased by the Grays Peak Scenic Development Company, which planned to extend the rails to the top of Grays Peak and to erect a hotel on the summit. These plans were never realized.

When the Argentine Central was sold in June 1912 at a sheriff's sale for $5,000, it was bought by William Rogers of Georgetown—the man who had first developed the Santiago claim.

Trains ran throughout the summer months until 1918 when the line was abandoned and the tracks torn up. On Aug. 1, 1948, 42 years after the road's completion and years after Wilcox's death, the man whose vision had built the railway, and whose religious principles had curtailed its receipts, was honored by having a mountain named after him. A large group of officials and dignitaries drove in automobiles to the deserted camp of Waldorf. There dedication ceremonies were held and a bronze tablet was unveiled, officially bestowing the designation "Mount Wilcox" upon a hitherto nameless peak opposite the town.

If Wilcox could see Waldorf today he would not recognize it. Through the quiet shell of the once busy camp sweep timberline gales which rattle the loose boards, the rusty sheet-iron, and the flapping canvas.



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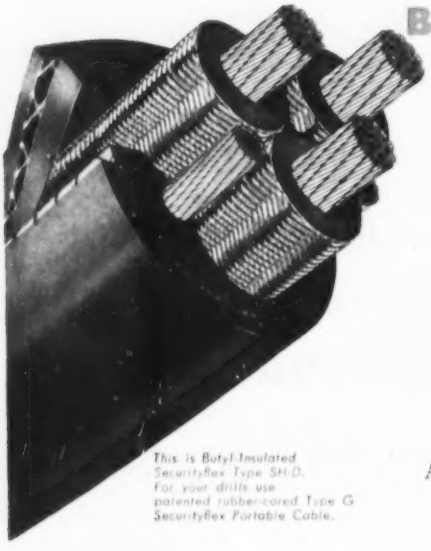

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ACTIVITIES OF U. S. MINING MEN

JOSEPH LANE has opened an office in Los Angeles where he will serve as a mill consultant. He has had many years of experience in all types of mills and plants, including flotation, crushing, magnetic separation, and cyanide plants. He was with the American Smelting and Refining Company for 17 years, and with the San Francisco Mines of Mexico, Ltd. for 21 years. He may be reached at 1451 West 96 Street, Los Angeles 47, California.

Appointments to the 1952-3 Committee on Natural Resources were announced recently by the U. S. Chamber of Commerce. Organized to deal with the dual problem of conservation of resources while withstanding increasing governmental control, the committee is composed of 37 men representing the extractive natural resources industries and the related fields of energy supply, conservation and federal land administration. Members of the minerals and metals group are **Horace M. Albright,** president, United States Potash Company, New York; **Ralph L. Dickey,** president, The Kelly Island Lime and Transport Company, Cleveland; **R. C. Klugescheid,** vice president and general counsel, **Kennecott Copper Corporation,** New York; **Frank E. McCaslin,** president, Oregon Portland Cement Company, Portland, Oregon; **H. L. Pierce,** vice president, Hanna Iron Ore Company, Cleveland; **Richard A. Young,** vice president, American Zinc, Lead and Smelting Company, St. Louis.

Four new appointments to the National Production Authority have been announced by **Henry F. Fowler,** administrator. **M. B. McCafferty,** Cleveland district sales manager for the Wheeling Steel Corporation, succeeds **J. D. Darby** of United States Steel Corporation as director of the Iron and Steel division of NPA. **John E. Timberlake,** general sales manager for Jones and Laughlin Steel Corporation, will enter government for the first time when he assumes his duties as deputy director of the iron and steel division. **William M. Day** is the new assistant administrator of the NPA in charge of the Metals and Minerals Bureau. Mr. Day, on loan from the Michigan Bell Telephone Company, will be in charge of the iron and steel, aluminum-magnesium, tin-lead-zinc, copper, salvage and miscellaneous metals divisions. **Joseph F. Miller** is moving up in governmental ranks from counsel for the copper and tin-lead-zinc divisions of the Metals and Minerals Bureau to the position of deputy director of the copper division.

New general manager of the mining department of the Copper Range Company is **Donald E. Moulds,** former chief of the base metal division of the Defense Materials Procurement Agency. Mr. Moulds, who will succeed **W. E. Romig,** is a graduate of the South Dakota School of Mines. He will set up headquarters at the firm's mining office at Painesdale, Michigan.

D. S. Dinsmoor, vice president in charge of research and development, is the newest member of the board of directors of American Potash and Chemical Corporation. The board of American Potash and Chemical now includes **Peter Colefax, W. J. Murphy, R. W. Mumford, William S. Glazier, R. F. Brown, Willard P. Scott, R. E. Vogel** and Dinsmoor.

Six appointments have been announced by Kennecott Copper Corporation. New chief geophysicist is **Ralph C. Holmer,** former instructor at the Colorado School of Mines. **Julian W. Feiss,** is new staff geologist in the exploration department. Mr. Feiss' most recent job was assistant to the Deputy Defense Materials Procurement Administrator.

WING G. AGNEW, engineer-in-charge of the U. S. Bureau of Mines Mt. Weather Experimental Mine at Bluemont, Virginia, made a recent trip to Africa where he toured the mining operations in the Union of South Africa and the Rhodesias. He also presented a paper at the South African Diamond Drilling Symposium. He is pictured here at the collar of the No. 2 elliptical shaft of the West Driefontein mine in the Orange Free State, following an inspection trip underground.

Frank A. Ayer has resigned as vice president of the Copper Range Company. Mr. Ayer for the past seven years has been in charge of developing and bringing into production the 300,000,000-ton White Pine orebody in Northern Michigan, and said that he has done all that he set out to accomplish at White Pine. He will maintain his own office at 40 West 40th Street, New York 18, New York.

New chief of the U. S. Bureau of Mines' Health and Safety Division is **James Westfield** of the Bureau's Northwestern region office. Westfield will be replaced by **W. H. Tomlinson.**

U. S. Smelting, Refining and Mining Company has announced the following appointments at its Midvale plant: **C. A. Nelson,** general superintendent (he will also continue to act as smelting superintendent); **Archie A. Nelson,** mill superintendent; **F. J. Marshall,** assistant smelter superintendent (Mr. Marshall will also continue as general blast furnace foreman); **R. A. Pallanch,** consulting mill metallurgist; and **Allan C. Vaughan,** assistant director of the research laboratory. **Loren Creglow** is director of the research department.

New staff members of the M. A. Hanna Company are **Herbert Arndt,** mechanical engineer (Hibbing, Minnesota), **Larry Andrews,** geologist (Iron River, Michigan). Recently promoted are **Victor Phillips,** Hibbing, to pit foreman at the Morton mine; **Lester Aho,** Hibbing, to washing plant foreman at the Mesabi Chief mine; **Walter Salmi,** to pit foreman at the South Agnew mine.

J. Frank Geary has joined the staff of Holmes and Narver, Inc., engineers-constructors of Los Angeles, as head of the company's mining division. He previously served for three years as assistant chief engineer for Inspiration Consolidated Copper Company.

Frank E. Downing has retired as chief engineer of the mining division of the Department of Taxation of Minnesota. Mr. Downing held this position for 13 years and was previously chief engineer for the Shenango Furnace Company, now the Snyder Mining Company.

New instructor in geology at the Colorado School of Mines is **Charles E. Melbye.**

Allen B. Hollett, mining engineer from Taconite, Minnesota, has taken a position with the American Smelting and Refining Company in the firm's New York office.

Donald C. Kimball, mining engineer, has been appointed superintendent of the Coons-Pacific Company concentrating plant near Eveleth, Minnesota. This new plant is owned jointly by the E. W. Coons Company and the Pacific Isle Mining Company.

Wayne Bolitho, mining engineer, formerly with Jones and Laughlin Steel Corporation at Star Lake, New York, has resigned to act as assistant to his father, **E. C. Bolitho,** in his fee inspection work at Ely, Minnesota.

Edward Schmid, Jr., has been appointed director of public relations and publicity for the Reserve Mining Company, and will have headquarters in Duluth, Minnesota.

Lucian Eaton, Jr., George Childs and **J. C. Heilman,** engineers in the Hibbing, Minnesota, office of the Western-Knapp Engineering Company, have been transferred to the company's Chicago offices.

J. J. SULLIVAN of Gabbs, Nevada, has been awarded the Medal of Honor of the Joseph A. Holmes Safety Association for his heroic act in the Wah Wah mine, Milford, Utah, in 1942. Mr. Sullivan saved the lives of five miners after they had been overcome by explosives fumes. He carried each one from a drift to the shaft station, tied them to the crosshead, and sent them to the surface. He collapsed himself upon reaching the surface.

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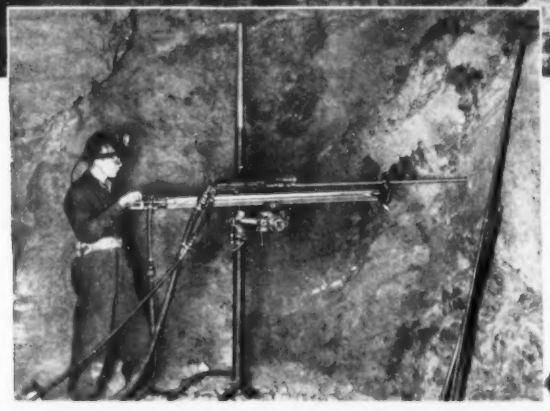

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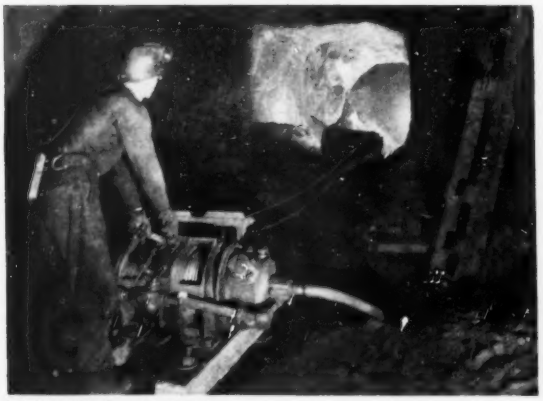

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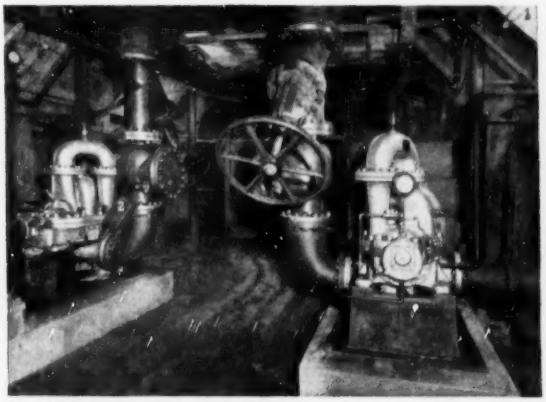

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I-R centrifugal pumps have proved their outstanding economy and dependability under the most severe conditions of mine service. Each of the four-stage, 500 hp units shown handle 800 gpm at 1700 ft head in a centralized drainage system for a group of copper mines.

J. H. Cazier has resigned as general superintendent of the Bagdad Copper Corporation in order to give all his time to operating the Copper King zinc mine near Bagdad, Arizona, and to start production at the Black Pearl and Phillips tungsten mines, where a large deposit of swelling-type bentonite is being developed. Mr. Cazier is in business with **E. A. Scholz.**

Marshall Haney, a consulting mining engineer of Takoma Park, Maryland, recently completed the examination of a large coal property in the Richmond Coal Basin, situated about 20 miles from Richmond, Virginia. The first coal mined in North America was from this basin.

Carroll E. Dobbin, a geologist in the U. S. Geological Survey since 1918, has received the honorary degree of Doctor of Engineering at the Colorado School of Mines in Golden, Colorado. Dr. Dobbin is with the Mineral Classification Branch of the Survey's Conservation Division as Geologist in charge of the Rocky Mountain Region.

J. Frank Geary has joined the staff of Holmes and Narver, Inc., engineers-constructors of Los Angeles as head of the company's mining division. He is well known in the Globe-Miami district of Arizona, having served for three years as assistant chief engineer for Inspiration Consolidated Copper Company.

A. B. Parsons has resigned as director of the Program Development Division of the Defense Materials Procurement Agency in Washington, D. C., to return to his home in Oakland, California. He spent the last 18 months in Washington with the DMPA and its predecessor the DMA. He will continue to act as a consultant to DMPA and its related agencies with offices in San Francisco.

L. E. Hanley, chairman of the board of Hecla Mining Company, has been awarded an honorary doctorate degree by the University of Idaho, from which he graduated in 1900. Mr. Hanley has been an active participant for nearly a half century in the important mining developments of the Coeur d'Alene district in Idaho.

E. B. Jennings, general superintendent of Tennessee Coal & Iron Division, has been assigned special duty with that company's raw materials department. Mr. Jennings has been succeeded at the Jefferson City, Tennessee operations by **Frank B. Vrophy,** former assistant general superintendent.

Charles C. Goddard III of Butte, Montana, a mining geologist, has been transferred to the Kennecott Copper Corporation's northwest exploration office in Spokane, Washington, which opened last January. The office is headed by **L. B. Moon,** former chief of the Bureau of Mines minerals division in Washington, D. C.

John Gray, former general mine foreman of the Copper Cities Mining Company at Miami, Arizona, has been named mine superintendent of the Castle Dome Copper Company. **Maynard M. Stover** succeeds Mr. Gray as general mine foreman. Both companies are subsidiaries of Miami Copper Company.

F. J. Perry has been appointed supervisor of ore movement for Oliver Iron Mining Division at Duluth, Minnesota. Mr. Perry, the former supervisor of exploration drilling for the Division, succeeds **Samuel Naismith** who has been transferred to the company's Pittsburgh, Pennsylvania office. Other changes in Oliver personnel include **Joseph A. Fowler,** mining engineer who has been transferred from Hibbing, Minnesota to the Canisteo district operations at Coleraine, Minnesota; **Robert D. Lindberg,** who has been appointed assistant general superintendent of the Gogebic district, Michigan operations; and **James S. Steel,** who has been named to succeed Mr. Perry at the Duluth general offices.

CLARK L. WILSON has been elected vice president and manager of operations of New Park Mining Company at Keetley, Utah. He was formerly mine superintendent. Peter Joralemon has been elected superintendent and a member of the board of directors; Walter E. Bauer has been appointed chief geologist; Frederick A. Kuhlman has been appointed chief engineer; and Don C. Andersen has been appointed mine geologist.

Fred G. Gurley, newly re-elected president of the Santa Fe Railway, headed a group of Santa Fe officers and executive committee members making a rail tour from Chicago to Los Angeles. An inspection of the company's development of uranium deposits near Grants, New Mexico, was included in the journey.

Nate Hecker, former superintendent of Round Mountain Dredging Corporation's mill at Tonopah, Nevada, has resigned to work his own mine near Tonopah. **Tony Notti** and **Dick Ewing** have also left Round Mountain and are now working at the Castle mine near Austin, Nevada.

Fred De Vaney of Hibbing, Minnesota, research engineer with Pickands, Mather & Company, has been granted a patent on a rotary kiln nodulizing process which he has assigned to the Erie Mining Company.

Thomas P. Anderson, mining engineer and geologist, has resigned from the Raw Materials Division of the U. S. Atomic Energy Commission where he was assistant chief of the Denver Exploration Branch. He will enter private practice in Golden, Colorado.

Bert O. Brand has been elected vice president and secretary of the Vanadium Corporation of America. Mr. Brand has been with Vanadium Corporation for ten years as secretary and comptroller. **John J. Spollen,** former assistant comptroller, is the new comptroller.

Mason Bingham of Portland, Oregon, has been named board chairman of the Oregon State Board of Geology and Mineral Industries to succeed **Neil R. Allen** of Grants Pass, Oregon.

Arthur E. Manthey of Virginia, research engineer with the Oliver Iron Mining Division, has been transferred to the Oliver research laboratory in Duluth, Minnesota. Also transferred to Duluth were **Herman G. Haase** and **James H. Robertson,** mechanical engineers with Oliver, formerly in the Hibbing-Chisholm district.

Edwin D. McKee, University of Arizona geology department head, is the new president of the Arizona Geological Society. He succeeds **Dr. Charles Anderson** of the U. S. Geological Survey, Prescott, Arizona.

Obituaries

Perry B. Wickham, 68, well known mining engineer and mine operator in southern Oregon, died in Oakland, California, July 21. Probably no other man knew southern Oregon lode mines better than he. He was superintendent of the Almeda Consolidated Mining Company organized by his father, and then a field man for Western Metals Company, before he decided to buy the Ashland gold mine in 1928. He operated this mine and the Shorty Hope and Greenback mines, some of the larger lode mining operations in the state.

Vivian A. Thorne, 88, owner of the Banner mine near Idaho City, Idaho, died in Idaho in July. He was at one time in charge of the Idaho Gold & Silver Mining Company. When this property was abandoned, he bought the Banner mine and operated it until his death.

Hugh A. Burk, for many years a metallurgist for the Tonopah Extension Company and the White Caps Mining Company in Nevada, died in Los Angeles July 10. He was at one time superintendent of an ore crushing plant at Fresnilla, Mexico.

Byron C. Riblet, 87, founder of the Riblet Tramway Company, died in Spokane, Washington, July 5. Mr. Riblet built his first tramway in 1897 in British Columbia. He designed and furnished, and with the Graham family, constructed the Premier Tramway in Alaska for the American Smelting and Refining Company in 1919. This tramway was noted for having a traction rope 22 miles in length, said to be the longest moving rope in the world. He built another, 34 miles long, in Peru.

William Harold Hoover, 63, president of Anaconda Copper Mining Company, since 1949, died in Butte, Montana, June 6. He joined Anaconda in 1936 as Western General Counsel, becoming General Counsel in 1942, and vice president in 1943. He was president and director of the Andes Copper Mining Company, Basic Magnesium, Inc., Butte Water Company, Chile Copper Company, and the Chile Exploration Company.

Harry P. Pearson, 59, prominent northwest mining man, died in Idaho June 9, while on a mine inspection trip. Mr. Pearson was president of the Idaho Custer Mines, Inc., the Silver Summit Mining Company, the Reindeer Queen Mining Company, and the Pearson Mining Company. It was largely through his efforts that the Silver Summit became an important producer. He located the property in 1927 and interested Polaris Mining Company in financing continuation of development until commercial ore was found.

Lic. Carlos Sanchez Mejorada, 68, dean of mining law at the National University of Mexico and member of the executive board of the Mexican Mining Association, died in Mexico, D.F., June 24, shortly before he was to be installed as president of the Mexico D.F. Rotary Club.

ACTIVITIES OF INTERNATIONAL MINING MEN

Isfendiyar Obay and **Ali Sultan Baykal**, two Turkish converter foremen, are making a three-month study of the latest copper conversion methods at the Phelps Dodge Corporation's plant in Douglas, Arizona. The Mutual Security Agency, under whose auspices the two men are studying, selected this plant because equipment identical with that in the Turkish mines—converters of the Pierce Smith barrel type—is used there.

Ernest N. Patty, first University of Alaska School of Mines dean, dedicated the new Brooks Memorial Mines Building on the university campus recently. Mr. Patty is now president of Alluvial Coal and Woodchopper creeks in Alaska and in the Klondike.

Dr. Samuel S. Goldich, geologist for the U. S. Department of the Interior's Geological Survey, is in the Pocos de Caldas area in Minas Gerais, Brazil, making a reconnaissance examination of bauxite deposits. Dr. Goldich's examination, similar to other Point Four examinations made in Brazil in the past, is being conducted in cooperation with geologists from the Departamento Nacional da Producao Mineral.

Eric Cottrell, who is in charge of diamond drilling operations for the Zinc Corporation at Broken Hill, New South Wales, Australia, recently visited **J. L. Havlick**, owner of Havlick Diamond Drilling Company in Seattle, Washington, on his way home from a diamond drilling symposium in South Africa. Mr. Havlick was formerly employed by the Broken Hill firm.

New general manager of Kongsberg Solvverk, 300-year-old Norwegian mining firm, is **Harald N. Ross.** Manager of the mines, which are located in Kongsberg, is **Anders M. Heltzen.**

A team of 13 French labor-management representatives and technicians is currently visiting mines in West Virginia, Missouri, and Oklahoma to attempt to find out why productivity in American iron ore mines is about three times that in their own country. Members of the team, who are being accompanied by Mutual Security project manager **Bradford J. Johnson**, include: **Jacques Kelly** (team leader), manager, Societe Anonyme des Mines de fer de La Mouriere, Paris; **Paul Lucien Brucker**, engineer, Societe Anonyme des Mines de fer de St. Pierremont a Mancieulles; **Valentin Damme**, hoistman, Societe Anonyme des Mines de fer de St. Pierremont a Mancieulles; **Joseph Dworak**, hoistman, Forges and Ac. du Nord and de L'Est, Mines de Piennes; **Albert Gilson**, foreman, Forges and Ac. du Nord and de L'Est a Joudreville; **Raymond Paul Gousset**, mine foreman, Societe des Ac. de Longway mine, Moulaine; **Jean Jedar**, overman, Societe Civile de Joudreville Bouligmy (Meuse); **Emile Koltes**, engineer, Cie des Forges de Chatillon Commentry a Vouves-Maisons; **Stephan Kukfisz**, mine worker, Societe Anonyme des Mines de fer de St. Pierremont a Mancieulles; **Joseph Lucien Malherbe**, hoistman, Societe Miniero Droitaumont Bruville; **Georges Maretine**, engineer, Societe Anonyme des Hauts Fourneaux de la Chiers, Mine de Bure (Moselle); **Francois Paul Meley**, engineer, Societe Civile de Joudreville a Bouligny-Meuse; and **Emile Schneider**, mining engineer, Service des Mines—Metz—(Moselle).

BLAIR BURWELL (right), president of Minerals Engineering Corporation of Grand Junction, Colorado, has accompanied FRANK EICHELBERGER of Spokane to South Korea where they will make an inspection trip of the country's mines that are open. Frank Eichelberger and Associates are negotiating with the South Korean government to take over management of the mines, which produce tungsten, bismuth, columbium, tantalum, and gold. If negotiations are successful, an operating crew, including a general manager, liaison officer, mining engineer, metallurgists, assayers, and mill men, will be sent over to run the principal mines.

P. J. Shenon and **R. P. Full**, mining geologists formerly of Spokane, Washington, have returned to consulting work, with headquarters in Salt Lake City, Utah. They are currently engaged in an examination of the Matahambre mine in Cuba. Later in the summer they will begin comprehensive studies in the Coeur d'Alene district of northern Idaho.

Arthur Farenwald, dean of the school of mines at the University of Idaho, a prominent metallurgist, recently visited the United States Tin Corporation mine and mill at Cape Prince of Wales, near Nome, Alaska. He is reported to have been quite enthusiastic about the operations and future production.

R. S. Douglas has resigned as assistant general manager of Canadian Exploration, Ltd. because of ill health. G. A. Gordon, formerly manager of Cariboo Gold Quartz Company, has been appointed as his successor. **Harold Lakes** is general manager.

M. D. Midson has been appointed chief engineer to Montana Silver-Lead N. L. at Zeehan, Tasmania. He was previously electrical engineer to King Island Scheelite (1947) Ltd. at King Island, Tasmania. **N. Whitford** is metallurgist at King Island.

Franklin Price, mining engineer, has recently opened offices in Seattle, Washington. He was formerly located in Vancouver, Canada. Mr. Price's most recent examination was to check the mercury property in Kittatas County, Washington, leased by White Metals Mining Company of Seattle.

Sri B. Bhargava, former general manager and chief mining engineer with R. B. Seth Mool Chand Nemi Chand Ajmer, India, has taken a post as special officer of mines with the Government of Orissa, Sambalpur, India.

William Sempert, export representative of the Hyster Company, is on a trip through French Equatorial Africa, Belgian Congo, and Angola where he will consult with Hyster dealers and demonstrate Hyster equipment. **William Fleming**, another export representative, is in Australia, New Zealand, and the Fiji Islands on a similar trip.

C. S. McLean has been elected president of the Transvaal Chamber of Mines in Johannesburg, Union of South Africa. New vice presidents are **W. H. A. Lawrence** and **C. B. Anderson.**

H. J. O'Carroll, formerly assistant smelter superintendent of Braden Copper Company at Sewell, Chile, is now assistant general manager of Kennecott Copper Corporation at Ray, Arizona.

Thomas P. Liss, metallurgist for the Galigher Company in Salt Lake City, Utah is in Chuquicamata, Chile assisting the milling staff of Anaconda Copper Mining Company in the starting of the first few sections of the new concentrators just completed for the flotation treatment of sulphide ores.

Charles A. Park of Benguet Consolidated Mining Company has been transferred from its Masinloc, Zambales mine to its Antamok mine near Baguio.

Waldemar Zeidler is manager of the mining and crushing department of the Svenska Skifferolje Aktiebolaget (Swedish Oil Shale Company) at Kvarntorp in Middle Sweden.

M. D. Midson has resigned from the staff of King Island Scheelite (1947) Ltd., to be chief engineer and technical superintendent of the Montana Silver Lead N. L. at Zeehan, Tasmania, Australia.

Gloyd M. Wiles has been named vice president and general manager of the Nickel Processing Corporation and will be resident manager of the operation at Nicaro, Cuba. Mr. Wiles continues as manager of the mining department of National Lead Company, which recently acquired a majority interest in Nickel Processing Corporation.

H. H. Suter, formerly with T'dad Leaseholds Ltd., in Trinidad, British West Indies, is now with that company in Toronto, Canada.

F. T. M. White, professor of mining and metallurgy at Queensland University, Australia, has been elected federal president of the Australian Institute of Metals. **G. J. Brittingham**, consulting metallurgist of Port Kembla, New South Wales, and **H. K. Worner**, professor of metallurgy at the University of Melbourne, have been elected as federal vice presidents of the Institute.

INTERNATIONAL NEWS

International Society Of Photogrammetry To Meet

The International Society of Photogrammetry, composed of specialists in map-making from aerial photography throughout the free nations of the world, will convene in Washington, D. C., this month to celebrate the centennial of the art and science of mapping and surveying by means of the photogrammetric process.

Papers and reports will be delivered in four languages, and both professional and commercial displays of new developments will be shown.

President of the Society is Captain O. S. Reading, U. S. Coast and Geodetic Survey. Members of the Council from overseas are Professor F. Baeschlin, Switzerland; Professor G. Cassinis, Italy; Engineer R. Janicot, France; Professor W. Schermerhorn, Netherlands. Delegates are also expected from Latin America, Asia and Africa. The American Society of Photogrammetry, headed by Dr. George D. Whitmore of the U. S. Geological Survey, will be host for the convention.

Hudson Bay Takes Option On Yukon Metals Discovery

Hudson Bay Mining and Smelting Company of Flin Flan, Manitoba, has taken an option on claims covering a nickel-copper-platinum-cobalt-zinc discovery in the northern Yukon. Diamond drilling will begin soon on the orebody, which is located in difficult terrain near Kluane Lake north of Whitehorse.

The most important showing thus far had a width of 48 feet running 3.2 per cent nickel, 2.2 percent copper, 4.0 percent zinc, 0.14 percent cobalt, plus small amounts of precious metals including platinum.

The "find" itself occurs in the bottom of a deep straight-walled canyon close to the Alaskan highway. Hudson Bay has 76 claims in the discovery bloc, as well as the 118 claims which adjoin the strike on the southeast.

Prospectors Airways Company, Ltd., of Toronto, has staked ground adjoining the discovery group on strike to the northwest for a known total of 28 claims in a bloc, and is readying an exploration program.

Other large firms, impressed by the nature of the discovery, the widths and the assays, have also staked claims. Companies known to be participating include Kennecott Copper Corporation (whose original copper mine lies about 100 miles away in Alaska), Conwest Exploration Company, Ltd., and American Smelting and Refining Company.

The find was made by a group of prospectors headed by Walter Green who were working for a local company called Yukon Mining Company, Ltd. It is understood that the company's arrangement with Hudson Bay was $15,000 cash down on a total of $250,000 cash over three years, plus 200,000 shares in a 3,000,000-share company, as applied to the discovery group of 76 claims. On an adjoining bloc of 118 claims, the arrangement was the same except that the cash payment was $10,000.

AS&R Bolivian Shutdown Due to Labor Disorders

A long period of continuous labor disorders, plus diminishing ore reserves, has forced American Smelting and Refining Company to suspend copper mining operations at its Corocoro mine in Bolivia.

The lengthy history of labor difficulties dating back to 1944 culminated recently in a situation wherein it was necessary for the managerial and technical staff to be evacuated to La Paz because of threatening actions by the Bolivian miners. From time to time during this eight-year period, engineers, foremen and other supervisory personnel have left the property after having been threatened or beaten up by rioting groups of workmen. In addition, discipline among the workers, particularly those underground, has seriously declined.

American Smelting and Refining has operated the Corocoro mine through its Bolivian subsidiary, La Compania American Smelting Boliviana, S. A., since 1934. Three hundred tons of copper concentrate were produced a month, and 850 men were employed.

Diesels Speed Canadian Tungsten Mine Output

Canadian Exploration Company at Salmo, British Columbia, Canada's largest tungsten producer and also an important lead-zinc supplier, has replaced its mine cars with a fleet of Diesel trucks for hauling ore from the mine's underground workings. Use of the trucks is feasible in this operation because of the size and nature of the ore deposits which are large, thick and flat, and run for more than a mile in length.

The trucks are driven right into the mine, loaded with ore by Eimco loading machines, then driven back to the portal where they are unloaded onto a conveyor which runs into the mill. This method, adopted as a means of reducing operating costs, is being employed by this company for the first time in Canada. Eight Dart trucks, manufactured by the Dart Truck Company of Kansas City, are serving the operation. Powered by 100-hp Cummins Diesel engines, they are equipped with Westinghouse air brakes, Budd wheels with Rock Service tires, and Landis steel hydraulic dump units.

The large haulage drive designed to permit truck hauling of ore directly from the stopes is 18 feet high and 15 feet wide. The trucks will be used for handling both lead-zinc and tungsten ore. Present workings will not be changed over to the new transport system, but all new areas, involving the bulk of the tonnage, will be opened in that way.

The company is contemplating an increase in the capacity of the lead-zinc mill at Salmo this year. Originally rated at 250 tons when built during the war by the Canadian government to treat scheelite ore, the mill has handled as much as 811 tons this year, and the contemplated setup would give a capacity of about 1200 tons daily.

Development of the tungsten orebody is well under way and the property now ranks among the continent's major producers. The newly completed tungsten mill, nominally rated at 500 tons capacity, is believed to be capable of taking up to 700 tons of ore daily. Of this, 250 tons capacity is reserved for the treatment of tungsten ore from the Emerald mine under an agreement with the Canadian government. The company holds contracts for the sale of tungsten through to the middle of 1958.

Cb_2O_5-Ta_2O_5 Bonus Payable Only to Actual Producer

The Defense Materials Procurement Agency has designated the Wah Chang Corporation of New York, and the Fansteel Metallurgical Corporation of North Chicago as purchasing agents for its recently announced columbium-tantalum ore and concentrate buying program.

The purpose of the program is to stimulate production of the metals in the United States and abroad. Under the bonus terms of the program, 100 percent of the base price is payable only to the producers of ore or concentrates meeting purchase specifications. Sellers will be required to certify as to the identity of the producer. When the seller is not the actual producer, he will receive only the base purchase price, and the bonus will be paid to the producer.

Ores and concentrates must be delivered in lots of not less than 2,000 pounds of acceptable grade material. A minimum grade of 35 percent combined columbite and tantalum oxides has been set at a base price of $1.40 per pound of combined pentoxides. The guaranteed purchase program extends until December 31, 1956, or until 15,000,000 pounds of the oxides have been purchased.

Eastern Serbia To Get New Copper Mine And Mill

According to reports from Belgrade, Yugoslavia, plans are being drawn for a copper mine and flotation plant to be built at Majdanpek in eastern Serbia. Completion date is set for the end of 1955 or early in 1956.

Geological exploration in the neighborhood of the new site, located about 50 kilometers north of the Bor mines near the Hungarian border has indicated proven reserves of some 100,000,000 tons of ore with an 0.9 percent copper content. Copper output, it is estimated, will be approximately 15,000 to 16,000 tons annually and will act as a supplement to the declining production at the Bor mines.

U. S. TIN CORPORATION INCREASING LODE TIN RECOVERY AT ALASKAN MILL

The United States Tin Corporation, headed by Kenneth J. Kadow of Juneau, Alaska, is making some changes in its 100-ton pilot gravity concentration mill at its Lost River property near Cape Prince of Wales, Alaska. Additional equipment will be installed to increase the percentage of tin recovered.

This is the only lode tin operation under the flag of the United States. With the aid of a $375,000 Government loan, exploration work was started during the summer of 1951. A pilot plant was completed by November, and machinery was installed during the winter. Mill operation was delayed by the lack of water, but now a 400-foot shaft in the footwall is down 330 feet and it is expected to strike water at the 400-foot level.

Paul Sorenson, formerly manager of the Hirst-Chicagof gold mine in southeastern Alaska, is general superintendent at Lost River. He reports that during the first two weeks of mill operation, two tons of tin concentrate were produced every 24 hours. Three more concentrating tables are being installed and it is expected that an 80 percent tin recovery can be achieved. The ore also carries around 9.0 percent tungsten. Ore treatment is comparatively simple with table recovery following ball mill grinding.

Placer operations were carried on last summer, but this year efforts are being directed to the lode development. The country rock is Ordovician limestone, intruded by two masses of granite with acidic and basic dikes of several ages.

Diesel fuel for the two Superior 150-hp engines is brought in 50-gallon steel oil drums. These are reused later when concentrates are packed into them, welded shut, and hauled six miles by tractor train to a beach on the Bering Sea, where they await the steamship which normally brings supplies to that part of the Arctic. This season, a current West Coast steamship strike during the short summer ice-free period has definitely hampered operations.

The big obstacles to development are high costs of operation, uncertain communications, and transportation. The corporation has bulldozed out a small airfield near the mine for small planes, and another field at the beach, but aircraft cannot handle all of the heavy materials required for additional construction. There is no road to the property.

Another handicap is the weather. During the winter high winds blow constantly. There is a heavy snowfall and drifting. In the spring and fall there is a deluge of rain. Only during a few months of the year is it possible to carry on any outside construction.

At present U. S. Tin is employing 110 persons. With the exception of key men, the labor is largely Eskimo from the surrounding area. Company officers are: Kenneth J. Kadow of Juneau, president; Robert McIntosh and Fred Furey of Seattle, vice president; R. "Scotty" Gibbon of Seattle, secretary; and Fred Loomis of Seattle, treasurer. Chairman of the board of directors is Harry Fischnaller of Omak, Washington, and serving on the board are M. J. Walsh of Nome, and B. F. Dunn of Juneau.

Gold Discovery Causes Rush In Amazon Wilds

A new gold field said to contain remarkably rich deposits has been discovered in one of the wildest corners of Brazil, and has already attracted between 2,000 and 5,000 persons to the area. The deposits are on the banks of the Jari River, a northern tributary of the Amazon forming the boundary between the Brazilian State of Para and the Territory of Amapa and near the frontier of Dutch Guiana (Surinam).

Since the deposits were first discovered two months ago by a pair of prospectors, about 135 kilograms of gold worth $135,000, are known to have been taken out of the area. Communication with the region, which takes a minimum of three weeks to reach, is so bad, however, that little is known definitely beyond the fact that at least a small area is extremely rich in gold.

One of the original discoverers, Erroneas Fernandes da Silva, reportedly is top authority in the disease and inflation-ridden area. Miners returning to the Atlantic coast report that he allots all claims to newcomers and is obeyed without question.

The Governor of Amapa Territory, Major Janari Nunes, has been trying unsuccessfully to combat the gold fever because of the disruption of the agrarian economy. Gold was found in the Amapa region in 1895, and there have been sporadic rushes since then, but production has never been very high.

Tramming ore to the 100-ton pilot mill of U.S. Tin Corporation in Alaska.

JAPAN—*Muromachi Busan Trading*, a Japanese firm, reportedly is negotiating with the *Hochschild* interests for the import of about 8,500 tons of Chilean copper ore and concentrate. The present arrangement is for a Japanese ship to bring the copper to Japan by mid-October. It is reported that there is a growing shortage of scrap copper in the country which is handicapping smelter production.

ISRAEL—Arrangements have been made by the Israeli government for a newly formed corporation to buy the British-owned potash works at the southern end of the Dead Sea. The *Dead Sea Works, Ltd.* was formed by the government which will hold 51 percent of the voting stock. In return for its assets, *Palestine Potash Ltd.* will receive shares in the new firm with a value of £1,220,000, which is a third of the equity, and debenture stock for £390,000. They will also be entitled to 16 percent of the voting power. The remaining 33 percent will be issued for public subscription. The potash works at the north end of the sea are in Jordan territory and are not involved in the sale.

MALAYA—Chinese tin production in Malaya was down 1,973 tons in 1951, and a further decline is anticipated by the president of the All-Malaya Chinese Mining Association. He reports that the heavy taxes required to fight guerrilla warfare are a severe burden for marginal mines to carry. In addition, there is a growing lack of available mining land, difficulty in prospecting for new areas, and an inability to continue mining on land of low-grade value.

SOUTH KOREA—A $2,000,000 project to double the production of tungsten ore has been undertaken by the South Korean government. Present monthly production now averages 250 tons; by next May when the project is completed, it is anticipated that South Korean tungsten mines will meet one-third of the world's needs. Under a trade agreement, Korea's tungsten is exported to the United States exclusively.

INDIA—The Geological Survey has located deposits of iron ore in Madras, Madhya Pradesh, and Vindhya Pradesh during the last three years. A survey of

the Bellary district in Madras has indicated 130,000,000 tons of iron ore; at Rowghat in the Bastar district of Madhya Pradesh, iron ore resources amount to about 800,000,000 tons. The ores are said to be of high grade and to occur in the shape of massive hills. The deposits are assumed to be only 150 feet deep, but experts think it is possible that the ores extend to a greater depth, in which case the resources will be much higher. With the location of these deposits, the total iron ore resources of the country are estimated to amount to over 10,000,000,000 tons. However, annual output is only about 3,000,000 tons, mined mainly in Singhbhum in Bihar, Mayurbhanj, Keonjhar, and Bolai in Orissa, and Bhadravati in Mysore.

JAPAN—The *Japan Mining Company* and the Nationalist Government of China in Formosa have signed a contract to refine 500 tons of Formosan copper ore monthly for eight months. It is expected that the contract will be renewed after that period, with the tonnage then raised to 1,000 tons per month. The refined copper will be returned to Formosa and the Japanese firm will receive $9.50 per ton as a refining fee.

THAILAND—*Taquapa Valley Tin Dredging* reports that during 1951 2,755,000 cubic yards were treated for a recovery of 360.67 tons of tin oxide, which realized an average of about £619 9s 10d per ton. This is £185 18s 3d more than obtained the previous year. Mine working costs were £349 0s 9d per ton and working profit £270 9s 1d per ton, exclusive of depreciation and Penang office expenses. In 1951, 0.29 pounds per cubic yard were recovered at a cost of 10.96 pence, as compared with 0.43 pounds in 1950 at a cost of 8.20 pence. The No. 1 dredge has now completed dredging the South East Extension and will cross the river to enter the Plaiwah area. This area will provide work for about 2 to 3 years, by which time it is expected that the dredge will have worked back to the Takuapa River. Here the machinery and superstructure will be dismantled and transported to the Northern area. The No. 2 dredge is working down river to the Northern area and has met with considerable success. Installation of the new bucket line has been completed and better yardage is expected to be handled.

TURKEY—The report appearing in the May 1952 issue of *Mining World* about the lack of electrical equipment in the *Eregli* coal mine and the lack of mechanical and electronic knowledge on the part of the Turkish miners was in error. The true facts are these: At least 20 to 25 of the engineers employed by *E.K.I.* are graduates of English, German, and American Universities with degrees as Master of Science or higher. About 3,000 different types and sizes of electric motors (ranging from fractional hp to 600 hp), approximately 100 transformers, and 3,000 switches were in use underground and in surface installations when British Thompson-Houston engineers installed their underground lighting system. Power for the mines in the area are supplied by the Catalagzi power plant; the Kozlu power plant; and various substations.

JAPAN—The *Kamioka Mining and Smelting Company*, located in Fukuoka prefecture on Kyushu Island, has completed a new fuming plant at its Miike zinc smelter. Production is now under way treating 3,000 tons monthly of zinc bearing slag. Production is expected to be 350 tons of electrolytic zinc, 28 tons of lead, and small amounts of gold, silver, and copper included in the matte. The process applied at the Miike smelter is as follows: Residues from zinc retort distillation, electrolytic zinc tank sludges, and copper slag are mixed with silica and pyrite cinder and sintered. The sinter is charged to a blast furnace with limestone flux. Copper, gold, and silver contained therein are recovered as a copper matte, while a large part of the zinc and lead remain in the slag. The hot slag is charged to the fuming furnace into which pulverized coal is blown. The zinc is fumed off and forms zinc oxide which is desulphurized in a rotary kiln, the oxide is placed in solution and zinc recovered in the plant's electrolytic unit.

INDIA—*Central Provinces Manganese Ore Company, Ltd.* has completed its diamond drill program at *Balaghat* and *Ukwa* mines and the drill rig has been transferred to the *Kandri* mine. An HMS plant is being installed at the *Dongri Buzurg* mine to extract manganese from the old dumps there.

JAPAN—A 1,000-ton plant is being erected by the *Toho Aen Company* to treat the zinc slag from its Annaka zinc smelter in Gumma prefecture on the Island of Honshu. The plant will have a capacity for treating 1,000 tons of slag per month to extract 180 tons of zinc.

FRENCH EQUATORIAL AFRICA—Conferences have been held in Paris on the possibility of setting up a Franco-American research company to prospect and develop the manganese deposits in Franceville, French Equatorial Africa. Participating in the discussions were the *U.S. Steel Company*, the *Mining Office* of the *French Overseas Territories*, and several French companies, including *Mokta-El-Hadid* and *Compagnie Miniere d'Congo Francais*. The deposits are said to cover an area of about 50 square kilometers.

SOUTH AFRICA—A loan of $19,600,000 has been granted by the Export-Import Bank to help increase uranium output in South Africa. The bank had previously lent $35,000,000. The new loan will be used to increase the electric power supply for byproduct plants which separate uranium from gold ore. Specifically, the money will go to the Electricity Supply Commission of South Africa to expand the steam electric power facilities.

NIGERIA—Rapid expansion of columbite production is expected in Nigeria as a result of the U.S. Defense Materials Procurement Agency's latest price offers for the material. The colony supplies 95 percent of the world's columbite. Not only has a much higher price been offered, based on quality rather than quantity, but a 100 percent incentive bonus has been added. Nigerian producers have been getting 320 shillings per unit (£1,040 per ton). In the future, they will receive between 544 shillings a unit for 50 percent columbium-tantalum-bearing ores, and 648 shillings for 70 percent ores. Principal producing companies are *Amalgamated Tin Mines of Nigeria* and *Jantar Nigeria*. Most of the other Nigerian tin producers recover some columbite as a byproduct.

BELGIAN CONGO—*Miniere du Beceka* produced 10,027,000 carats in industrial diamonds last year, as compared with 9,604,000 carats in 1950. This output came from nine workings located in the basin of the Lubilash River. In spite of their record output, the company also increased its reserves through successful prospecting. The Kimberlite fissure was located by diamond drilling during the year.

SOUTH AFRICA—The Margaret and Charles shafts of *Stilfontein Gold Mining Company Ltd.* have been connected and stoping operations have now begun. Lateral development has been suspended for a while to concentrate on increasing the supply of ore from the stopes to the mill on a scale commensurate with its 50,000-ton-per-month capacity. When the need arises, lateral development from the Charles shaft will be resumed. For some time to come, however, the Charles shaft will continue to supply mill requirements, and later the Margaret shaft will be placed in production when that shaft has been sunk to its final depth. Stilfontein has been selected as the site for a plant to manufacture sulphuric acid which, in turn, will supply the acid requirements of the company and other gold producers who will be extracting uranium.

GOLD COAST—*Taquah and Abosso Mines Ltd.* reports that for the year ended March 31, working costs rose. A new wage agreement is in operation which increases the African payroll by 18 percent—equivalent to an additional 4s per ton of ore milled at current production rates. The cost of supplies has also increased so that present-day working costs are 60s per ton of ore milled. It is said that this means present reserves of ore have become marginal at the current official price of gold. It will be necessary to either increase production or seek a better market for gold, the free market, to offset this situation. However, current production of ore is reported to be below the normal optimum and, until this is remedied, operations may run at a loss.

SOUTH AFRICA—The No. 1 shaft of the *Free State Geduld Mines Ltd.* passed through a heavily faulted zone of the Basal Reef between 4,809 and 4,812 feet below the shaft collar. Reef exposure was limited to about ⅛ of the perimeter. The reef was badly broken and samples taken at irregular intervals from the fractured portions averaged 26.48 dwt. over 7.14 inches, or 189 inch-dwt. No. 1 shaft is located very close to borehole No. 2 on the farm Rietpan 674, in which borehole the Basal Reef was intersected at 4,785 feet and assayed 124.8 dwt. over 8.7 inches, or 1,086 inch-dwts. In No. 2 shaft, the Basal Reef was disclosed 5,399 to 5,425 feet below the collar and samples around the perimeter exposure averaged 46.32 dwt. over 13.71 inches, or 635 inch-dwts. In a nearby borehole, the Basal Reef at 5,446 feet assayed 22.75 inch-dwts.

BELGIAN CONGO—As a result of negotiations between Austria and the Belgian Congo, arrangements have been made to ship 25 tons of cobalt to Austria. This is the amount allotted by the International Materials Conference. Delivery of 6¼ tons has already been made. The remainder will be supplied against Austrian deliveries of goods which are not included in the trade agreement between the two nations—that is, pit props, aluminum, and pig iron.

GREAT BRITAIN—The Conservative Government's proposals for returning Britain's steel industry to private enterprise have been published in the form of a short "white paper." A Holding and Realization Agency will be set up to sell the now publicly owned units of the industry, which produce some 16,000,000 tons of steel a year, to private ownership. The former owners will have priority if they want it. A board, whose members are appointed by the Government, will supervise the industry in the public interest, but will not interfere with day-to-day management. Various interpretations are placed on the meaning of this clause. No definite proposals are made to enable the industry to raise the £300,000,000 of new capital needed to finance the great new expansion scheme.

YUGOSLAVIA—Development work is progressing on the country's first wolframite mine, and production is expected to start by the end of the year. The concentrate will be processed at Sibenik to produce ferrowolfram. Some quantities of gold will also be produced from the mine, which is located in eastern Serbia. The separation plant and some of the mine equipment were procured through the aid of a loan from the United States Export-Import Bank.

NORWAY—Construction of the large new iron works at *Mo i Rana* in North Norway, belonging to the Government, is proceeding according to plan and production is expected to start early in 1954. Ground work has been completed and much of the auxiliary work is about finished. The colossal stations which have been excavated in the mountain are being divided and fitted so that electrical equipment can be installed. Pouring of all the concrete silos is complete and the work of erecting the iron framework is proceeding, in order that the roofs can be cast. These silos go down 17 meters and are to store ore, limestone, coke, etc. A limestone quarry has been started in the district not too far from the works, and the limestone needed for the production of iron can be transported directly to the plant.

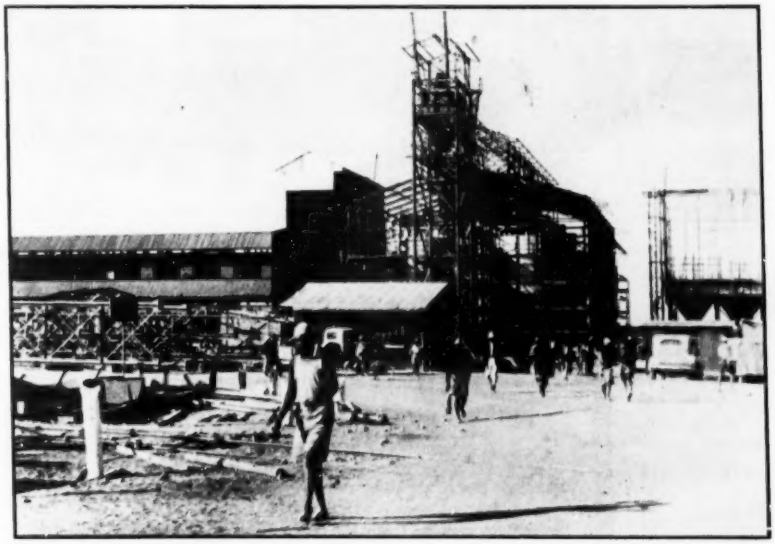
FINLAND—On the basis of aerial photographs, the Geological Research Institute is carrying out ore prospecting by plane in southern and middle Ostrobothnia on the western coast of Finland. Similar investigations are planned for the Finnish Karelia.

ENGLAND—Private trading in lead reportedly will be restored in Britain as soon as possible. The London Metal Exchange will reopen for trading in lead on or about October 1. The Ministry of Materials, which imports and sells all of the lead used in Britain, will wind up its activities, and most of its stocks of about 100,000 tons will be disposed of through the free market. Ministry of Materials contracts with overseas producers will be ended as soon as possible, and these producers will sell in London, thereafter. Before the war, London was the center of lead trading, and set the world price. They are hoping that this desirable position will be resumed. The metal trade reportedly will continue to press for a return to private trading in copper and zinc.

WEST GERMANY—Two smelters have closed until further notice—the Clausthal lead smelter and the Lautenthal silver smelter, both operated by *Berg-und-Huttenwerke Gmbh* of Goslar.

YUGOSLAVIA—A record output of 505,000 kilograms of mercury was achieved by the *Idrija* mine last year. The same rate of production has been maintained thus far this year, and it is expected that the mine will again supply over 500,000 kilograms. Normal annual production before the war was usually about 300,000 kilograms. Most of the mercury is exported to the United States, Switzerland, the Nordic countries, and Western Germany.

WALES—The steel works of *John Summers and Sons* at Hawarden Bridge, Shotton, in Flintshire, have just started pouring steel at the rate of 15,000 tons a week. This will mean an immediate increase of 50 percent on present production. Eight new open-hearth furnaces are in operation. This is the first



RHOKANA'S COBALT REFINERY ADDITION

The new addition to Rhokana Corporation's electrolytic cobalt refinery in Northern Rhodesia has been completed and is now in operation. At present, output is in the form of a cobalt alloy, containing nearly 700 tons of cobalt. It is expected that the new facility will increase this figure to over 2,000 tons of cobalt metal per annum. The first cobalt ever sold commercially by the mine was in September 1933. It is now the second largest producer in the world. The picture above, showing the plant addition under construction, was taken by M. F. Holsinger of the *Mining World* staff during his recent tour of Africa.

stage of one of the industry's main development projects, costing £27,000,000 and designed to produce 1,000,000 ingot tons annually. In October, two batteries of 44 coke ovens each will start producing coke. Before Christmas, the blast furnace with a hearth diameter of 27 feet, reportedly the largest in the world outside of the U.S., will start with a production of 8,000 tons of pig iron a week made from imported ores. Work has also begun on the building of two more batteries of coke ovens and two 150-ton open-hearth furnaces. When these are finished, the plant will have an annual output of 1,250,000 tons.

WEST GERMANY—The *Gewerkschaft Mechernicher Werke* at Mechernich will double its annual lead production when its new plant begins operation. The increased rate is expected to reach between 16,000 and 18,000 metric tons. The mines will increase their output from 3,200 tons per day to 6,000 tons daily when the new equipment goes into operation. The company is said to produce the purest lead in Germany, 99.995 percent lead. The expansion is being financed by the Marshall Plan program, the Land Nordrhein-Westfalen, and the Preussag.

NORWAY—A pyrite deposit is said to have been discovered by *Folldal Mines* while diamond drilling at Sondre Geitryggen. Further information is not yet available.

LATIN AMERICA

BOLIVIA—Reports from Bolivia indicate that the outlook for the mining industry is dark. With the large mines threatened with nationalization, the foreign technical staff is ready to leave at any moment, and normal replacements cannot be made. Although the medium and small mines have not yet been threatened, these companies have been obliged to make very high wage increases (50 percent or more). If no modifications are made, many of the mines will have to close down. The Banco Minero de Bolivia, which under the new decree has to handle all sales of minerals and authorize all currency allotments for purchases, cannot handle the situation efficiently. The Bank does not have sufficient silver and gold currency available to pay the miners for their minerals, nor to pay wages.

BRAZIL—The new aluminum plant being erected in Aluminio, state of Sao Paulo, is expected to be in operation by the end of this year. The plant has cost 1,000,000,000 cruzeiros so far, and is owned by *Companhia Brasileira de Aluminio*. The company is also building a 240,000-hp hydroelectric plant on the Juquia River to supply power to the aluminum plant. Bauxite will come from Pocos de Caldas. A special mill to process the bauxite has been built at a cost of 400,000,000 cruzeiros.

PUERTO RICO—The *West Indies Mining Corporation* has opened a second iron mine about eight miles from its first operation. It is called the *Island Queen* mine. Ore will be transported by truck to San Juan where it will be loaded on ocean-going ore boats. James B. Hustad of Duluth, Minnesota is president of the firm.

BRITISH WEST INDIES—Geological surveys of the island of Jamaica have shown that iron ore exists in commercial quantities. The Secretary of State for the Colonies is reported to have already approved the exportation of 5,000 tons of the ore to Germany. A search is under way for manganese in Manchester, St. Elizabeth, and Portland Parishes. Gold bearing deposits are said to have been found in the abandoned *Hope* mines, and it is estimated that the mines will yield 2,500 tons of ore per month for at least five years. A license had already been provided for the mining of lead, zinc, copper, and silver on the property.

MEXICO—Two mining companies have recently been organized and registered in Mexico, D.F.: *Cia. Minera La Sorpresa*, S.A., by Eleazar Diaz and Aureliano Gonzalez; and *Cia. Minera del Rio Murza*, S.A., by Ernesto Santos and Arsenio Espinosa.

BRAZIL—The Joint Brazil-U.S. Commission has recommended a $15,000,000 loan for the *National Alkali Company* to build a soda ash and caustic soda plant at Cabo Frio in the state of Rio de Janeiro. The plant would be located near the Lake of Araruama. The bottom of

the lake would be dredged to obtain lime, while salt is already plentiful in the region. Brazil's *National Steel Company* will supply the ammonium sulphate, and national coal will be used to produce steam. The industry will thus operate almost exclusively with Brazilian raw materials; the only imported item will be fuel oil for heating the lime kilns.

BRITISH WEST INDIES—The expansion program undertaken by *Kaiser Aluminum & Chemical Corporation* at its Jamaican mines is about half way completed. Shipments totaling 31,500 tons of bauxite per week will soon leave the new pier now under construction at Little Pedro Point. Also under construction are a 13-mile railroad from the port to the mine, a new ore dryer at the Point, and an additional employees' residence. A new Diesel electric generator and additional conveyors will also be installed to handle the increased production. The shipments will almost double Kaiser's current production from the mines. The ore is destined for the firms' Bayer process refining plant at Baton Rouge, Louisiana.

MEXICO—Mexico promises to be among the world's important suppliers of sulphur and indications are very good that this condition will materialize early in 1953, says the Banco Nacional de Mexico, S.A., after a survey of the Mexican sulphur situation. According to the Bank, the country has increased its sulphur production from barely 9,800 tons in 1950 to 30,835 tons in 1951. In 1950, it was necessary to import 11,407 tons, but only 10,093 last year. Also, last year, 6,945 tons were exported which, the Bank says, justifies the importation of last year. Imports in 1952 promise to be negligible. The government committee controlling sulphur has set 44,600 tons as the national requirement and a 46,000-ton production is expected this year alone from the Vera Cruz plant of *Petroleos Mexicanos* and the mines of *Negociacion Minera Azufera*, S.A., at Cerritos, San Luis Potosi. Petoleos Mexicanos has made its second shipment, (5,000 tons) to Cuba this year, and is preparing to ship 4,000 tons to Canada. Though they are still exploring, the Bank expects important sulphur developments from the *Texas Gulf Sulphur Company*, the *Gulf Sulphur Company of Mexico*, the *Mexican Gulf Sulphur Company*, and the *American Gulf Sulphur Company*.

BRAZIL — *Companhia Estaniferado Brasil* which owns a modern plant for reducing tin ore, is importing cassiterite from Portugal to be reduced in its plant at the same time that it treats Brazilian tin ore from the state of Minas Gerais. The government is reported to have suspended all exports of tin to England by *Companhia de Estanho Sao Ioao del Rey*. Yet the Brazilian National Council of Research and the Brazilian National Department of Mineral Production have reported that it is difficult to treat tin from this area because of the presence of so many other minerals with the tin ore. Included are tantalite, djalmaite (an oxide of tantalum and uranium), monazite, and spodumene.

MEXICO—Gold-silver veins are reported to have been discovered in the El Porrenir mine in the state of El Oro, which was abandoned several years ago because ore was believed exhausted. Samples from these veins are said to assay as high as 16 grams of gold and 48 grams of silver per ton.

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INTERNATIONAL

WESTERN AUSTRALIA—*Anglo Westralian Mining Pty. Ltd.* has acquired an option on copper leases approximately 40 miles south of Marble Bar. Preliminary investigations are reported to have indicated a lode with a width of 100 feet over a length of 2,000 feet. Sampling has indicated a grade of more than 20 percent copper. The company intends to prove the lode in depth by diamond drilling, and is at present considering means of accomplishing this because the leases are located in an isolated area.

PHILIPPINE ISLANDS—Full mill capacity of 10,000 tons has been reached by the *San Mauricio Mining Company* at its property in Camarines Norte. Some improvement both in recoveries and in per-ton values is anticipated as greater experience is gained by the operating crews in the mine and mill which, at present, are largely composed of untrained men.

NEW SOUTH WALES—*Barrier Central Pty. Ltd.* has been formed as a wholly owned subsidiary of *Broken Hill South Ltd.* to operate leases No. 10, Kintore Section, and No. 11, 12, and 13, Delprat Section, held by the parent company. It is estimated that sufficient lead ore exists to last about 10 years. The ore is oxidized and is suitable for forwarding directly to the *Broken Hill Associated Smelters* at Port Pirie. No preliminary treatment will be undertaken at Broken Hill.

PHILIPPINE ISLANDS—*Marcelo Steel Corporation* has inaugurated the opening of its new steel rolling mill which will increase the firm's annual output to 40,000 metric tons. The new Manila plant was built at a cost of $3,000,000 to make use of the scrap steel in the sunken Japanese vessels in Manila Bay.

TASMANIA—*King Island Scheelite (1947) Ltd.* has resumed full-scale operations after output had been curtailed by a shortage of water. Recent heavy rains have now assured an adequate water supply.

SOUTH AUSTRALIA—Arrangements have been made to establish a £2,000,000 sulphuric acid plant at Port Adelaide. The new plant will be made partly in England and partly in Australia. Construction is to begin immediately and will take about two years. The acid plant is expected to be the largest single acid plant in the British Empire.

PHILIPPINE ISLANDS—*Itoeen Mining Company* near Baguio, Mt. Province, reports that its operations are continuing in a normal manner. Expansion of the mill's capacity to 15,000 tons per month has been completed. The 957 Itoe level has been reached in the No. 18 winze; the station has been cut and drifting is now in progress along the vein. Preliminary work is also underway toward reopening and unwatering the 23 Sesame winze. This winze will eventually be connected to the 1,300-level drain tunnel.

NEW GUINEA—*Sunshine Gold Development Ltd.* is to be disbanded. The company's undertaking in New Guinea has been sold to *Bulolo Gold Dredging Ltd.* Bulolo reports that for the 12 months ended May 31, 11,458,120 cubic yards were dredged to recover 79,413 ounces of fine gold valued at $2,779,445. In 1951, 12,321,000 yards were dredged to recover 68,229 fine ounces of gold valued at $2,388,015. The company has made an agreement with the Commonwealth Government of Australia to establish a plywood and timber enterprise, known as *Commonwealth-New Guinea Timbers Limited.* Arrangements are under way to design a plant and to purchase the necessary equipment.

WESTERN AUSTRALIA—*Protheroe* lead mine, operated by *Anglo Westralian Mining Pty.*, produced 2,377 tons of lead concentrates during 1951. The gravity concentration plant with a capacity of 80 tons per day, began operating in October, and by the end of the year production was 370 tons of concentrates per month. Erection of a flotation plant to treat current and accumulated residues is nearly complete, and is expected to increase production by about 100 tons per month.

PHILIPPINE ISLANDS—The reopening of the Longos section of *United Paracale Mining Company's* property has experienced constant difficulties with electrical failure of the 250-hp. motors of the four major pumps which have to handle up to 4,000 gallons per minute in unwatering the mine. On June 29, just after the 400 level had been cleared of water, these difficulties culminated when, within a 24-hour period, four of the 250-hp motors failed as a result of burned-out coils. This forced withdrawal from the 300 and 400 foot levels, and they are attempting to hold the water at the 200 level, but the outcome is still doubtful. The unwatering of the Baluarte vein section has progressed to 90 feet below the 200 level.

VICTORIA—A new company, *South Caulfield Gold & Mineral Mines N.L.*, will develop the *Generous* gold mine at Gapstead in the Beechworth district. The company will also acquire the *Lady May* wolframite and tin mine 10 miles east of Tallangatta.

PHILIPPINE ISLANDS—*Surigao Consolidated Mining Company,* whose mine is in Surigao, Mindanao, reported a net operating profit of 1,130,372.24 pesos last year, compared with 864,484.83 pesos in the preceding year. During 1951, the company mined and treated 120,453 tons of ore. The gold production was considerably greater than in any other year in the history of the mine, showing an increase of some 6,000 ounces over the previous year. While there was a decrease in the amount of lead produced, as compared to the previous year, zinc concentrate in considerable quantities was produced for the first time. This is said to be probably the first zinc produced in commercial quantities in the Philippines. Close to 400,000 pounds of zinc was processed at the company's mines from June to December 1951. Production increases were the result of two factors: the mining of higher grade ore developed on the lower levels of the mine, and the leaving behind of lower grade ore that previously would have been profitable, but which, if mined under present conditions, would result in little or no profit. These two factors raised the average gold content of ore mined from 0.367 ounce per ton in 1950 to 0.414 last year. The sinking of the new north shaft to the 500 level and its attendant facilities have been completed.

NEW ZEALAND—A proposal to reopen an old copper mine on Kawau Island is being examined by an Auckland syndicate. The present price of copper is believed to make this possibility attractive and it is believed that the copper would be shipped to Australia for refining.

LEPANTO'S PRODUCTION INCREASING

In the Philippine Islands, the Lepanto Consolidated Mining Company milled 358,583 tons of copper-gold-silver ore last year, a substantial increase over the 283,211 tons milled in 1950. Company's flotation mill treats 1,000 tons of 4 to 5 per cent copper ore daily, with a 92.70 percent recovery, producing a 30 per cent copper concentrate. Shown above are up-to-date interior views of the power plant and a compressor room. The Diesel power plant (left), consisting of five 860-hp. Worthington engines and one 400-hp. Ruston engine, delivers an average of 915,208.3 kw-hr monthly, at a cost of 0.043 pesos per kw-hr which mills 1.66 tons of ore. The machines in the compressor room (right) have a rated capacity of 5,000 cubic feet of air per minute.

QUEBEC—Copper mineralization has been unexpectedly encountered near the surface in the first stage of shaft sinking on the Chibougamau property of the *Merrill Island Mining Corporation*, according to Robert Devlin, consulting engineer. The ore—massive sulphides containing pyrite, pyrrhotite, and some chalcopyrite—was encountered at 23 feet and was still showing at 37 feet. Samples give copper content ranging from 1.28 percent to 5.95 percent.

ONTARIO—Discovery of further zinc intersections at *Zenmac Metal Mines Limited*, plus information on other nearby occurrences, suggest that a new base metal belt, featuring zinc but with good copper possibilities, is emerging in the Schrieber area, about 15 miles north of Lake Superior in northwestern Ontario. Dr. R. A. Halet, the Company's consulting engineer, has termed the 1,120-acre Zenmac property "one of the most promising areas in which to prospect for base metals in Ontario." Results of the 16 drill holes put down in the current drilling program were very encouraging. Drilling results on the No. 1 zone indicated a continuous body extending from surface to a depth of at least 300 feet below the outcrop. The body showed an average thickness of 26 feet. The average zinc content of the intersections was 11.3 percent. The length of the body (along the strike) will be determined by the next series of drill holes.

CALIFORNIA—New Idria Mining and Chemical Company has received the second largest loan ever granted in California by the DMEA. The firm will receive from the government three-quarters of the $243,349 to be spent to explore for quicksilver at New Idria mine in San Benito County. The project will take two years to complete.

SASKATCHEWAN—*National Explorations Ltd.* of Vancouver has ordered equipment for sinking a shaft at its Beaver Lodge Lake uranium property. Cores from the first three holes of this season's diamond drill program have shown radioactivity and this information led to the decision to sink a shaft. The first level of the shaft may be driven at a depth of from 75 to 100 feet.

BRITISH COLUMBIA—Diamond drillers are working on an around-the-clock basis at the *Mollie Mac Mines Limited* property in the Lardeau district. Access roads have been completed to the property which is at an elevation of 4,600 feet. Company officials are said to believe that surface drilling should be limited to the occurrences below the 4,800-foot elevation which have been exposed by trenching. One vein traced so far has shown values in lead and silver.

ONTARIO—*Leitch Gold Mines Limited* has almost completed rebuilding of its mill which will raise capacity from 85 tons daily to around 140 tons. This increased level of output is not expected to be reached until further developments are made on the Halport section of the company's property which is currently being explored. A long crosscut on the 800 level has been extended to the second ore zone or vein system and detailed diamond drilling from this area is just getting started.

ARIZONA—The Reconstruction Finance Corporation has approved a $94,000,000 loan for the development of the *San Manuel Copper Corporation's* property near Tiger, Arizona. Actual disbursement of the loan is said to be contingent upon the company's raising $17,000,000 from private sources to supplement the $10,000,000 already spent on the project. When full production is reached in 1957 or 1958, the firm expects to turn out about 140,000,000 pounds of copper and 6,000,000 pounds of molybdenum annually, resulting in an 8 percent increase in the U.S. production of copper and a 16 percent increase in the output of molybdenum.

ALASKA—Among those mining in Alaska this season are: John Frasca and Charles Gibson who are mining on Eagle Creek in the Circle district; P. J. McDougall and Oscar Enstrom who are at American Creek; James Zukoev at Gold King Creek; Hans Tilleson in the Ruby district; Grover Gurtler on Little Creek;

Ted Lowman in the Faith Creek area; C. A. Petterson and Bill Kirkpatrick in the Wiseman vicinity; William Loffstrom at Eagle; and Chris Sather and Gene Nelson who are doing assessment work on their mining claims at Portage Creek in the Alaska Range.

QUEBEC—President Samuel Ciglen of *New Goldvue Mines Limited* has announced that negotiations are well-advanced for acquisition by the company of a mill located in California. A pilot plant is now in operation to provide information on average recovery to be expected and to determine if the existence of gold values in the main carbonate zone containing the mine's extensive quartz vein pattern will permit mass mining of a very large tonnage. It is hoped that sufficient ore will be developed to warrant a milling rate of 500 tons daily. The mill purchase price will be entirely in stock, 613,000 shares and the management would increase capital a million shares to defray mill purchase and installation costs.

ONTARIO—The *Silanco Mining and Refining Company* announces that it has run into high-grade silver ore at its *Colonial* mine. Three raises put up along a length of 75 feet at the 1,020-foot level each entered high-grade silver and good mill-grade ore in the diabase. This represents the most potentially important silver ore development at the Colonial mine since its reopening.

QUEBEC—President Harry A. Strain of *Fenimore Iron Mines Limited* has revealed that his company plans a great expansion of exploration activity on its concession lying along the northern extension of the Quebec-Labrador trough. The field force is being increased and eight drills will be used. Three geological parties will investigate various parts of the property this year. The Moore and Moore extension showings have been tested to over 100 feet in depth, and one heavy drill will probe deeper into the iron formations at this location. Thus far the iron encountered has proved too high in silica content, but it is thought to have possible value as concentrating ore for mixing purposes.

SASKATCHEWAN—The most important new discovery of uranium in some months appears to have been made by a prospecting party of *Nesbitt LaBine Uranium Mines Limited*. In announcing the new discovery, President Gilbert LaBine reported that word had been received from company director John Nesbitt who is heading an exploration party for the company, that a new and impressive discovery of pitchblende has been found in 12 new occurrences. The find is believed to be located close to the Beaverlodge camp of Northern Saskatchewan. The company has not yet revealed the exact location. The 12 discoveries cover a length of 700 to 800 feet, and there are reported to be possibilities of 50-foot widths.

BRITISH COLUMBIA—*Jackson Basin Mining Company* is operating its new hoist after completion of the head frame and hoist building. Three bunkhouses have been completed and a new change house is under construction. The firm has 17 zinc-lead-silver claims near Kaslo. A millsite has been cleared and the company is reportedly planning installation of a 50-ton mill. Drifting is expected to begin on the new 6 level after a crosscut and an ore-storage pocket have been completed on the 5 level.

INTERNATIONAL

ONTARIO—The *Freeport Sulphur Company* is said to be conducting two diamond drill operations in Canada. One operation is located not far from Steep Rock Lake and the other is near Beadmore, Ontario. Both are exploring for pyrite. Sherman Tough is reportedly the engineer in charge of both operations.

NORTHWEST TERRITORIES—*Giant Yellowknife Mines, Ltd.* expects its mill production to reach 700-tons per day shortly and possibly 750 tons before the end of the year. A development program is under way at the mine to make available more than 1,500,000 tons of ore reportedly averaging more than one-half ounce of gold per ton. This would be in addition to the reserves already developed and would provide a reserve while searching for more ore.

ONTARIO—Shaft sinking is now under way at the property of *New Mosher Longlac Mines Limited*, after construction of a headframe and installation of a mining plant. The initial objective is 1,700 feet, sinking is scheduled at a rate of about 200 feet a month. The headframe and plant of the former Hard Rock acquired last year are being used at this site. However, if production is increased substantially, a larger plant will be installed and the shaft will be deepened to approximately 2,500 feet.

ALASKA—John Bufuers reports that he has staked claims formerly held by the *Flagstaff Mining Company* on Granite Mountain, five miles inland from Karta Bay. The property has been renamed the Treasure mine, in keeping with the name reportedly given it in 1899 by its discoverer, Antone de Nomie. Between 1937 and 1941, the property was under development by Flagstaff. A 1,100-foot main level was driven on the vein, several raises were made, and a 55-foot winze was sunk. A 15-ton pilot ball mill was installed in the valley, connected to the mine by a 1,800-foot aerial tramway. A considerable tonnage was mined in 1940, but a poor recovery of gold was made in the mill. Ore minerals are galena, chalcopyrite, sphalerite, covellite, and chalcocite.

BRITISH COLUMBIA—*Ainsworth Base Metals, Ltd.* plans to install a crusher and jig at its Black Fox property adjoining the Cork Province mine near Kaslo. This is being done on the recommendation of company engineers who say that the saving on freight and transportation charges which would result from shipping one ton of high-grade ore rather than two or three tons of low-grade would soon pay for these installations. In the mine, a draft on the "A" vein is being extended east and west, and a raise on the "E" vein has been completed. A diamond drill program is underway and the company hopes to prove enough ore reserves to warrant erection of a 50-ton mill.

MICHIGAN—*Calumet & Hecla Consolidated Copper Company* will unwater and equip its Osceola Lode in Michigan, under an agreement with the Defense Materials Procurement Agency. Total cost of the project is $6,000,000 and the expense will be borne by C&H. The DMPA has guaranteed the company an over-the-ceiling price of 25.5 cents per pound for up to 53,000 short tons of refined copper. The project is expected to take two years to complete.

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What To See At Metal Show

continued from Card Insert

UNIVERSAL DREDGE MANUFACTURING COMPANY—A newly-developed locomotive, the Universal air trammer (290), will be featured. It is operated from a receiver storage of compressed air coming from the normal 100-pound mine air compressor.

WESTERN GEAR WORKS—This producer of standard speed reducers will show a complete line, including machines

for single, double and triple reduction. Literature is available on all Pacific-Western models (302).

WESTINGHOUSE ELECTRIC CORPORATION—Three new portable power units will be shown by Westinghouse. They are the switchhouse 5,000-volt class (309), a mine power center 112½ to 400 kva capacity (310), and a selenium rectifier 17½ to 50 kw capacity (311). All three units are designed specifically for underground mining. Exhibits on control centers (312), linestarters (313), AC mining motors (314), gearmotors (315) and a mining type battery locomotive (316) will also be available.

WESTERN ROCK BIT MANUFACTURING COMPANY—The Liddicoat bit (308) will be spotlighted in this exhibit. It is made with a round socket in which

four flats are forged, has a slightly tapered skirt and fastens onto the rod with a drive fit. Its special features are two-stage cutting action and special wing design to retain sharp cutting portions, and an advanced pilot section which chips away the center hole to provide ease in collaring.

THE WHITE MOTOR COMPANY, STERLING DIVISION—To be exhibited are a White gasoline engine (317), a working model of the Sterling-White super traction differential (318) and an off-highway dump truck (319). Both the dump truck and the differential are newly-built models.

U.S. METAL & MINERAL MARKETS

METALS

AUGUST 20, 1952

COPPER:	Electrolytic. Delivered F.o.b. cars, destination U.S.A.	24.50¢
	Lake. Delivered, destinations U.S.A.	24.625¢
	Foreign Copper. New York	36.00-36.50¢
LEAD:	Common Grade. New York	16.00¢
	Tri-State Concentrates, jig, flotation 80% lead, per ton	$202.95
ZINC:	Prime Western. East St. Louis	14.00¢
	Tri-State Concentrate, (Eagle-Picher) 60% zinc, per ton	$100.00
ALUMINUM:	Primary 30 pound Ingots (99% plus). F.o.b. shipping points	20.00¢
ANTIMONY:	Bradley Mining Co.'s Elk Brand 99.5%. F.o.b. Cascade, Idaho	39.00¢
	Lone Star Brand. F.o.b. Laredo, in bulk	39.50¢
BISMUTH:	(In ton lots) price per pound	$2.25
CADMIUM:	Sticks and bars. 1 to 5 ton lots (Price per pound)	$2.00
COBALT:	97-99%, keg of 550 pounds (Price per pound)	$2.40
MAGNESIUM:	Ingots (99.8%). F.o.b. Freeport, Texas	24.50¢
MERCURY:	Flasks. Large lots, New York	$188.00
NICKEL:	"F" Ingots (5 pounds). F.o.b. refinery, Port Colburne, Ontario	56.50¢
TIN:	Grade A Brands. New York (Price per pound)	121.50¢
TITANIUM:	99.3% + (Price per pound)	$5.00-7.00
GOLD:	United States Treasury price	$35.00 per ounce
SILVER:	Newly mined domestic. United States Treasury price	90½¢ per ounce
	Foreign. Handy & Harman	83.25¢ per ounce
PLATINUM:		$93.00 per ounce

ORES AND CONCENTRATES

BERYLLIUM ORE:	10 to 12% BeO. F.o.b. mine, Colorado	$36.00 per unit
CHROME ORE:	F.o.b. railroad cars eastern seaports. Long tons dry weight.	
	African (Rhodesian). 48% Cr_2O_3.	$43.00-$44.00
	African (Transvaal). 48% Cr_2O_3.	$34.00-$35.00
	Turkish. 48% Cr_2O_3. 3 to 1 chrome-iron ratio	$53.00-$54.00
	U. S. Government ore purchase depot Grants Pass, Oregon, Base price, lumpy ore, $115.00; fines and concentrates $110.00 for 48% Cr_2O_3 and a 3 to 1 chromium-iron ratio. Premiums for higher grade ore and for a ratio up to 3.5 to 1. Penalties for grades down to 42% Cr_2O_3.	
IRON ORE:	Lake Superior. Per gross ton Lower Lake Ports.	
	Mesabi, Non Bessemer, 51.5% Fe	$ 8.30
	Mesabi, Bessemer, 51.5% Fe	$ 8.45
	Old Range, Non Bessemer	$ 8.55
	Old Range, Bessemer	$ 8.70
MANGANESE ORE:	Metallurgical grade. 46 to 48% Mn. Long ton unit	$1.15-$1.23
	Chemical grade. 80% MnO_2. Per ton	$70.00
	Chemical grade, domestic, 70% MnO_2, F.o.b. mines	$45.00
	U. S. Government ore purchasing depots: Deming, New Mexico; base price $2.30 per long dry ton unit of recoverable manganese less handling and treatment costs. Wenden, Arizona; base price of $8.54 per long dry ton of 15% manganese ore. Butte, Montana; base price of $6.05 per long dry ton of 12% manganese ore. Phillipsburg, Montana; base price of $6.43 per long dry ton unit of 15% manganese ore. Metallurgical grade manganese ore program. Small lots f.o.b. railroad cars, minimum 40.0% manganese. Base price (48.0% Mn) $2.30 per unit with premiums and penalties.	
MOLYBDENUM CONCENTRATE:	90% MoS_2. F.o.b. Climax, Colorado. Per pound of contained molybdenum, plus cost of containers	$1.00
TUNGSTEN CONCENTRATE:	60% WO_3. Per short ton unit	$65.00
URANIUM ORE:	Carnotite-Roscoelite. F.o.b. purchase depot plus $0.06 per ton mile ($6.00 maximum), Grand Junction, Rifle, Durango, Naturita, and Uravan, Colorado. Salt Lake City, Marysvale, Thompsons, and Monticello, Utah. Shiprock, New Mexico. Base price for 0.10% ore is $1.50 per pound and up to $3.50 per pound of contained U_3O_8 plus $0.75 per pound for each pound in excess of 4 pounds per short dry ton and an extra allowance of $0.25 per pound for each in excess of 10 pounds. A $0.50 per pound development allowance paid on all ores purchases. At shiprock all ores with more than 6% lime are penalized for excess lime.	
VANADIUM ORE:	Carnotite-Roscoelite. V_2O_5 in ratio of more than 10 parts to 1 part of U_3O_8 are generally acceptable at all AEC depots, but excess not paid for at Marysvale, Monticello and Shiprock.	

NON-METALLIC MINERALS

BENTONITE:	Minus-200-mesh. F.o.b. Wyoming points. Per ton in carload lots	$12.50
	Oil Well grade. Packed in 100 pound paper bags	$14.00
FLUORSPAR:	Metallurgical grade. 70% effective CaF_2 content per short ton F.o.b. Illinois-Kentucky mines	$42.00-$43.00
	Acid grade. 97% CaF_2	$60.00
PERLITE:	Crude: F.o.b. mine per short ton	$3.00 to $5.00
	Plaster grades. Crushed and sized. F.o.b. plants per short ton	$7.00 to $9.00
	Concrete grades. Crushed and sized	$6.00 to $8.00
SULPHUR:	Long ton, F.o.b. Gulf Coast mines	$22.00

Quotations on metals and certain ores through the courtesy of *American Metal Market*, New York, N.Y.

Costs, Profits, and Politics

Now that the steel strike has been ended by an uneasy armistice, there are important points that need consideration.

There has been an extension of its horizons by the Union. On the one side, there is the inclusion of the iron ore miners. On the other side, there was the demand for a Closed Union Shop. It is thus apparent that Mr. Murray has determined to form a complete vertical trust which shall have control of iron and steel production with himself as Czar.

By the new contract, the mill workers are granted their sixth wage increase. The steel industry has been promised partially compensating price increases, still to be agreed to. But the public is placed in a higher circle of the rat-race spiral of *Inflation*, and all pensioners, both civil and military, are shoved another step downward.

It should not be forgotten that the whole disturbance was spark-plugged by the decision of the Wage Stabilization Board, one of those innovations in government whose decisions with the force of law, are not subject to court review. It has been suggested in some circles that the public members of the Board were not without bias in the ruling.

During the strike, the President made a speech (which we heard over the radio) in which he stated that the steel companies made a profit of $19.50 per ton. We particularly noted that he used the word "Profit" without any qualification. It should not be thus used until *all* the charge items have been included. To say that he was not aware of the meaning of what he was saying is to charge him with a degree of incompetence that would totally unfit him for his office.

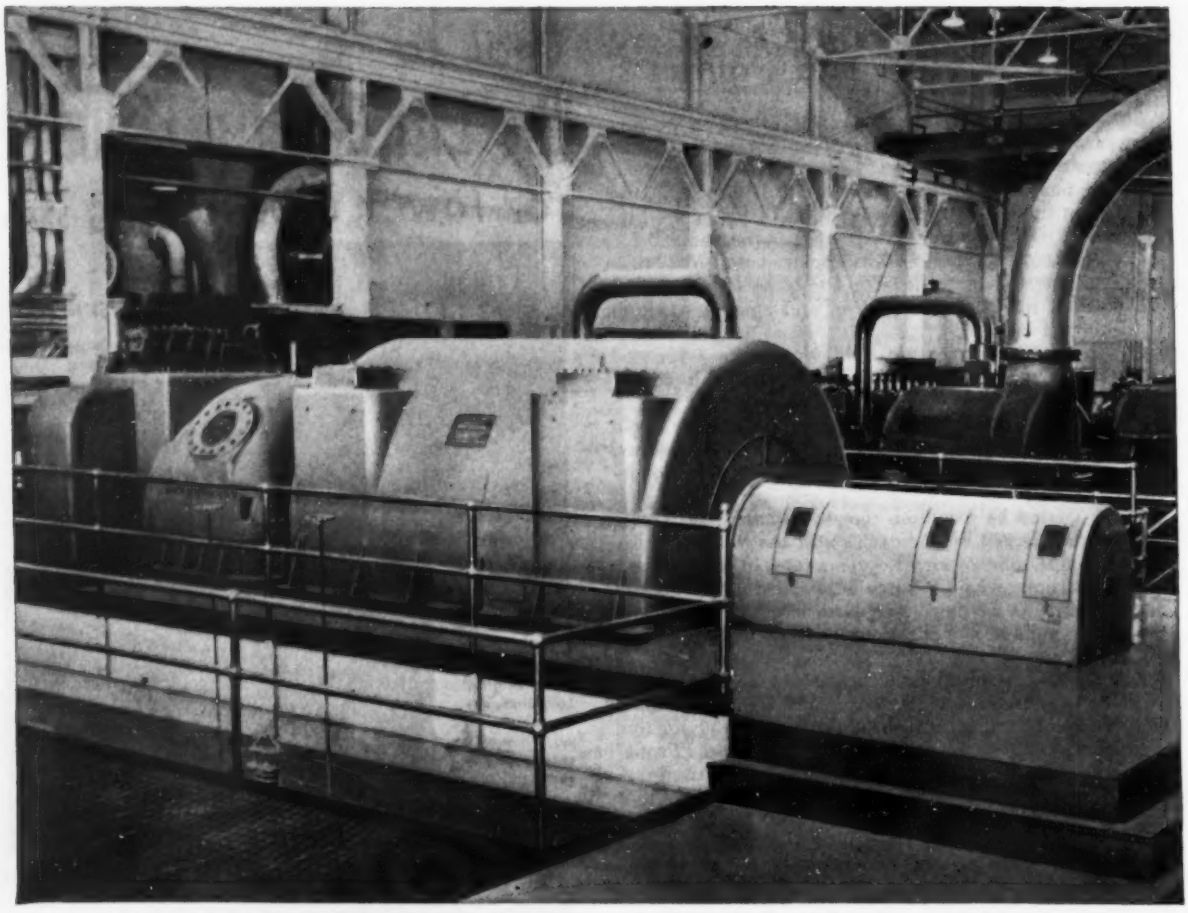
In actuality, the figure of $19.50 per ton which the President used represents the excess of income over expenditure in the physical operation of the mills, and is used by the supervisory officials as a check of operative efficiency in the plant.

The first chargeable item in the profit & loss account is that of taxes. We are told that the larger steel mills lie in the 75 and 65 percent tax brackets. On that basis the $19.50 per ton figure which the President used is reduced to $4.85 and $6.82 per ton respectively. This is certainly not an excessive profit on materials selling at more than $100.00 per ton. There are still other charges which must be deducted.

In this we are not using some new or fanciful argument for the same thing happens millions of times every week in this U. S. Let us consider John Smith, the prototype of all the men who live on ranches or farms. In these days of income taxes, etc. he keeps his own set of accounts. His main source of income is a flock of chickens or a bunch of hogs. Month by month he sets down the amount of his sales, and against this he places the cost of food, labor, etc. By this he knows the efficiency of his operation, but he is too conscious of the visits he must make to the tax collector and his insurance agent to begin to talk about either profit or loss. In this he is just the same as the operator of the largest steel mill.

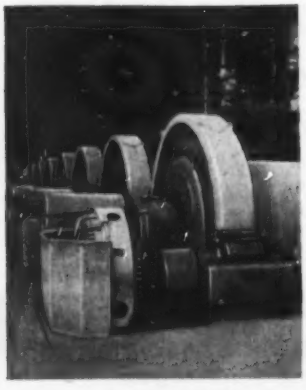
As we consider the matter from every angle we are forced to the conclusion that in his steel strike speech the President was guilty of an effort to deceive the American people which was in itself an insult to their intelligence.

The Wanderer

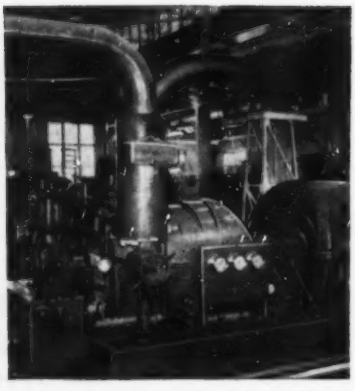


1 **NEW G-E STEAM TURBINE-GENERATOR** generates high-voltage power for this copper company's concentrating and smelting plant. Rated at 10,000 kw, 3600 rpm, the single-stage unit replaces an older 6000-kw unit which generated at 480 volts. Like every G-E turbine-generator, it is custom-built from standard components to meet specific operating conditions.

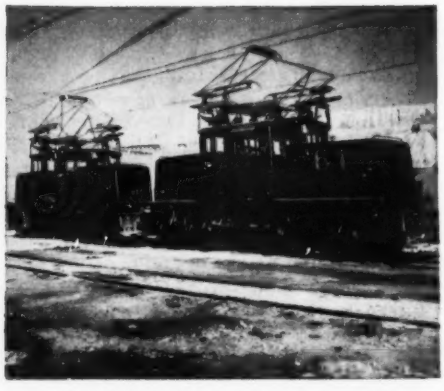
Power system modernized for



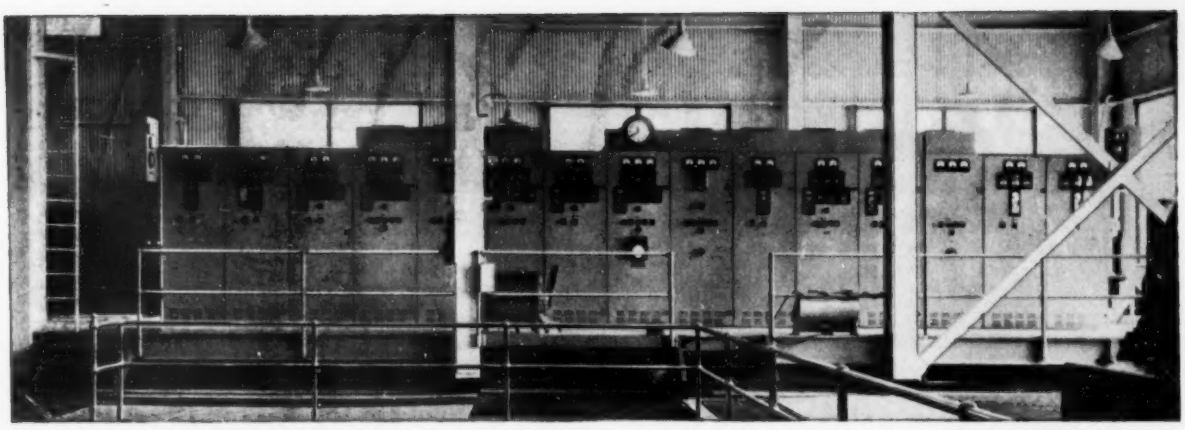
POWER-FACTOR IMPROVEMENT is provided by 28 200-hp synchronous motors driving plant's ball mills.



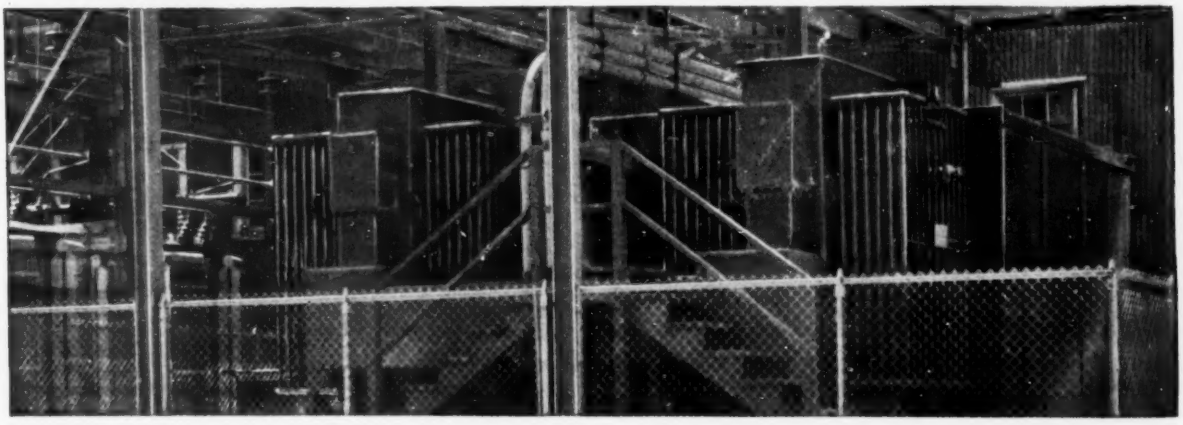
MECHANICAL POWER to drive two turboblowers is generated from process steam by 1915-hp G-E mechanical-drive turbines.



LOW-COST HAULAGE from the copper plant's open pit mine 15 miles away is provided by these two G-E 750-volt 85-ton electric locomotives.



2 **NEW G-E METAL-CLAD SWITCHGEAR** distributes high-voltage power to load-center substations in electrical load areas. These co-ordinated units are shipped completely assembled and ready for installation. Their compact design saves floor space.



3 **NEW G-E LOAD-CENTER SUBSTATIONS,** completely metal-enclosed, step down power from primary voltage to 480-v for use in the ball mill area. High voltage power distribution to load centers reduces voltage drop and cuts power losses.

more efficient distribution

Copper plant increases capacity by adding G-E turbine, switchgear and load-center substations to existing power system

As part of a continuing modernization program at its concentrating and smelting plant, a large copper company in the Southwest recently installed new General Electric high-voltage power generation and distribution equipment. With these new facilities, power is generated and distributed the modern, high-voltage way. Result: increased protection against shutdowns, lower power-distribution cost.

You, too, can benefit from the kind of G-E application engineering that went into this installation. Call your nearest G-E office and ask for a mining specialist. *General Electric Company, Schenectady 5, New York.* 660-25

Engineered electric systems for the copper industry

GENERAL ELECTRIC

STANDARD ENGINEER'S REPORT

DATA

LUBRICANT: Calol SA Grease

UNIT: 4½" anti-friction bearings

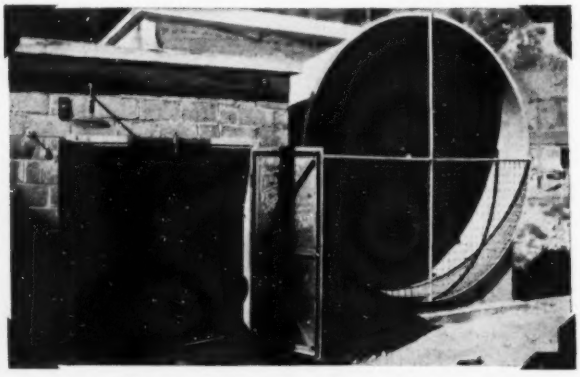
LUBRICATOR: Grease gun

CONDITIONS: Continuous operation, extreme temperature variations

PERIOD: 4 Years

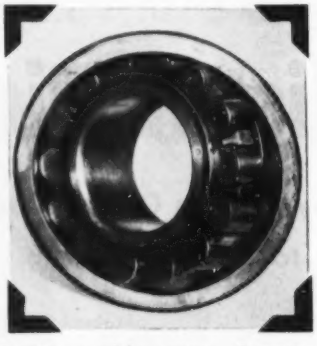
FIRM: U.S. Fuel Company, Hiawatha, Utah

Special grease stays soft at 20° below zero!



PUMPING 250,000 CUBIC FEET OF AIR PER MINUTE at the King Mine, Hiawatha, Utah, this exhaust fan must work continuously in a place where winter temperatures often reach 20° below zero. Even in this extreme cold, Calol SA Grease stays soft—does not channel, allow grease starvation and loss of bearings as was the case when other greases were used. Since using Calol SA Grease, U. S. Fuel Company has had no trouble with fans, a major point since men must be brought out of the mine if fan stops.

CALOL SA GREASE has been used by the King Mine in 4½-inch bearings like this for more than four years. They have not lost or changed any bearings in that entire period! They have also used Calol SA Grease to lubricate mine car wheels—and it stayed in, did a good job, even under heavy loads!



REMARKS: Calol SA Grease has a wide range of uses. It is especially valuable for anti-friction and plain bearings operating in extreme temperatures.

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How to reduce wear in all types grease-lubricated machine bearings

Specialized CALOL SA Grease will provide constant lubrication in high ambient and bearing temperatures—proved in mill ambient temperatures of 250°F. and Navy Ball Bearing Machine tests of 10,000 rpm and extreme temperatures.

A. Made from sodium-aluminum base...very high melting point minimizes seepage.

B. Feeds evenly to all bearing surfaces.

C. Remains soft in cold temperatures.

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RFC Approves Record Loan for San Manuel

Approval of a $94,600,000 loan for the development of the San Manuel Copper Corporation's property near Tiger, Arizona, has been announced by the Reconstruction Finance Corporation. Actual disbursement of the loan is said to be contingent upon the company's raising $17,000,000 from private sources to supplement the $10,000,000 already spent on the project.

San Manuel Copper Corporation, a wholly owned subsidiary of Magma Copper Company, has been exploring and developing the low-grade San Manuel copper deposit since 1944. Two shafts have been sunk, one to a depth of 1,650 feet and the other to 2,080 feet. The ore body is considered the largest new copper discovery in the past 20 to 30 years and is estimated to contain in excess of 500,000,000 tons of ore averaging about 0.8 percent copper.

When full production is reached in 1957 or 1958, the company is expected to turn out approximately 140,000,000 pounds of copper and 6,000,000 pounds of molybdenum annually. The result will be an 8 percent increase in the U. S. production of copper and a 16 percent boost in the production of molybdenum.

Plans call for a townsite, somewhere between Mammoth and Oracle, to accommodate approximately 7,000 persons, development of the underground mine for production of 10,000,000 tons of ore annually, plus milling and smelting facilities, utilities, and rail transportation.

Defense Materials Procurement Agency currently is negotiating a procurement contract with the company, one which will provide a guaranteed market at a price which will make production possible.

Contract for Electricity To Supply Silver Bell

The American Smelting and Refining Company has contracted with the Tucson Gas, Electric Light and Power Company of Tucson, Arizona for the delivery of power to the new Silver Bell copper mine, 40 miles northwest of Tucson.

The contract calls for a demand load of 10,000 kilowatts. A 45,000-volt high line, approximately 40 miles in length, will be constructed at an estimated cost of $300,000. First deliveries of power under the new contract are to be made late this fall. At present, a Diesel unit is being used to electrify the shovels employed in stripping operations at Silver Bell.

About 60 homes have been erected at the mine site for employes with families, and rooming and boarding house accommodations are available for single men. Stripping operations are handled under contract by the Isbel Construction Company, while the milling plant will be built by Stearns-Roger Manufacturing Company of Denver. T. A. Snedden is superintendent.

New Purchase Plan for Small Manganese Producers

To stimulate the production of commercial grade manganese, and to assist the small producers who have had difficulty in marketing small quantitites of manganese, the government has announced a nationwide program for government buying of manganese ore and concentrates from small domestic producers. The plan will supplement purchasing at the three manganese depots already established.

The government will buy carload lots of acceptable ores or concentrates at various rail points throughout the country for resale to industry. The program will run to June 30, 1956 or until deliveries totalling 19,000,000 long dry ton units will have been made. A long dry ton unit is 22.4 pounds of managanese contained in a long ton of dry ore. A small producer will be defined as one whose annual output is less than 10,000 long dry tons.

Prices paid for individual lots will be computed on a base price of $2.30 per long ton unit meeting these specifications: 48 percent manganese, 6 percent iron, 11 percent silica plus alumina, and 0.12 percent phosphorus. Better grades of ore will receive a higher price, and poorer gades a lowe one.

The *Arizona Corporation Commission* has approved the purchase of the Aguila water plant by the *U. S. Manganese Corporation* of Phoenix, Arizona, from the AT&SF Railroad. C. D. Brock, president of U. S. Manganese, says that the purchase of the water plant is part of an extensive expansion program of the company. The additional water supply is required in the increased mining and milling activities at Aguila. With the new tank, about 45 gallons per minute will be available for operations. The corporation will also continue to serve water to the people of Aguila.

The *Grand Canyon Lime and Cement Company* of Arizona has been granted accelerated tax amortization privileges on

DMEA AIDS NEW IDRIA MERCURY SEARCH

New Idria Mining and Chemical Company has received the second largest DMEA loan ever granted in California, and the largest ever granted for mercury. The money will be spent to explore for new ore zones at the New Idria mine in San Benito County, California. A general view of the upper camp is shown above. New Idria was the largest domestic quicksilver producer during World Wars I and II. The mine was reopened about a year ago after a brief shutdown caused by the low metal price. Nearly 6,000 feet of underground workings will be driven to explore geologically favorable virgin areas in the mine. Total cost of the project is $243,349, with the DMEA advancing three-quarters of the amount. Repayment will be in production obtained from the new discoveries. The project will take two years to complete. Gordon I. Gould is president of New Idria. Mine operations will be under the direction of C. Hyde Lewis, general superintendent.

$443,253 of its investment for new and expanded facilities to manufacture quicklime. The amount of the investment deemed eligible for the special tax privilege amounts to 40 percent of the total. The Grand Canyon company is mining approximately 1,750 tons of lime monthly from its open pit at Nelson, Arizona, and calcining the product in its kilns at Nelson. John S. Schirm of Los Angeles is president of the company. The Los Angeles plant for production of hydrated lime has been modeled in the past year, as has the mill at Nelson, for production of hydrated lime and pulverized quicklime.

The Grand Junction, Colorado, Exploration Branch of the *U. S. Atomic Energy Commission* has called for bids for a minimum of 15,000 feet and a maximum of 30,000 feet of diamond drilling within the Lukachukai and Carrizo Mountain areas of Arizona, according to Ernest R. Gordon, chief of the exploration branch. All drilling will be on the Navajo Indian Reservation with the principal area on Cove Mesa.

The *San Xavier* zinc-lead mine of the *Eagle-Picher Company* south of Tucson, Arizona, has been closed because of the decline in the price of zinc, according to Grover J. Duff, manager. The mine had been producing 400 tons of zinc-lead ore per day. It is the first reported closing of a major Arizona mine since the recent drop in zinc and lead prices.

The *Banner Mining Company* is continuing its development program at the *Mineral Hill* and *Twin Butte* copper mines in the Pima mining district of Arizona. Present work includes the unwatering and retimbering of the Glance shaft at the Twin Buttes mine and the Mineral Hill inclined shaft. The lower levels of both mines are being rehabilitated. Banner holds contracts with the Defense Minerals Exploration Administration for the exploration work at both properties. The total expenditure involved is $262,575, of which the government's share is $131,287.50, or 50 percent. A. B. Bowman is manager.

The *Reorganized Silver King Divide Mining Company* is mining about 100 tons monthly from drifts and crosscuts at its *Mount Union* mine. One raise is up 121 feet and drifts are being run from the top of the raise. Seven men are employed, with Nolan H. Deasy of Prescott, Arizona as manager.

The University of Arizona and the New Mexico Institute of Mining and Technology have been commissioned by the Interior Department to make a survey of mineral deposits on the Navajo-Hopi Indian Reservations. The survey is to determine the extent of deposits of copper, gypsum, coal, and other minerals (except uranium) known to exist on the reservation and of greatest interest to the two tribes. Work is expected to get under way immediately and to be completed no later than June 30, 1954.

Since the middle of May, the *Pima Mining Company* has been shipping from one to two cars of copper ore per day to the El Paso smelter from its property near Tucson, Arizona. Development of the property, known as the *Alpha* mine, was started January 1, 1952, as a result of geophysical work and a drilling project carried out during the previous year. A 425-foot, two-compartment shaft has been sunk and two levels established on the 300 and 400 levels. The mine is equipped with a surface plant consisting of a 100-horsepower double drum hoist, 600-cubic-foot electric compressor, steel headframe, shop, and other necessary buildings.

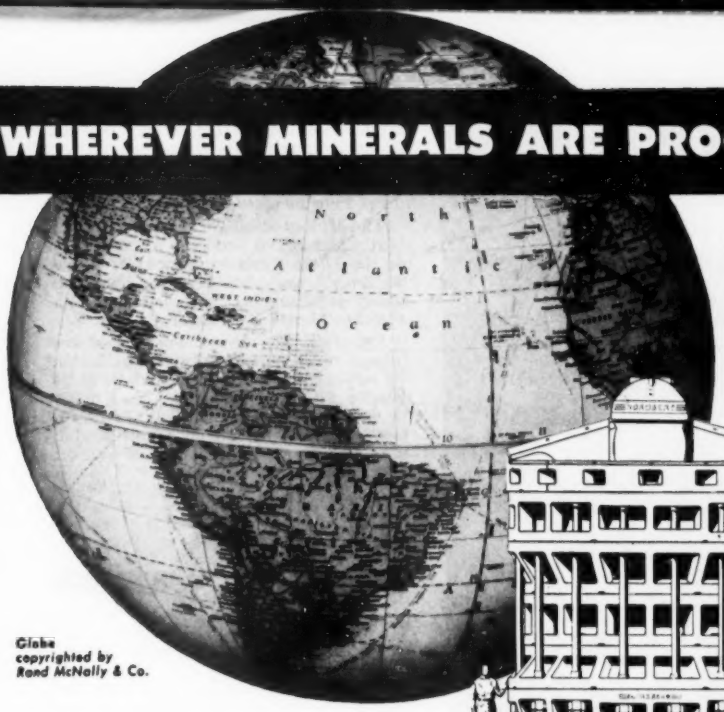
The *Thermoid Company*, processors of asbestos and manufacturers of many asbestos products, has made an arrangement with small producers in the Globe, Arizona, area whereby the producer may submit a sample of product to Thermoid for a purchase quotation. If the price is satisfactory to the producer, he may deliver his product to the Starkey Warehouse in Globe and receive a receipt. The receipt is mailed to Thermoid and check in settlement returned. The new arrangement will be a distinct advantage to small producers as it will enable them to dispose of their production without waiting to make carload shipments.

The *Copper World Mining Company* of Yucca, Arizona, is mining and milling from 75 to 100 tons of copper-lead-zinc ore daily, and is conducting operations on a three-shift basis. Tungsten was recently discovered in portions of the ore body, running up to 1.0 percent. Tests are in progress to determine methods by which the tungsten can be recovered and separated from the other minerals. George A. Freeman is president and general manager.

The *Arizona Asbestos Producers Association* was recently formed by a group of asbestos producers in the Globe, Arizona, area. The object of the association will be to study marketing problems, the betterment of transportation facilities in the district, and similar factors affecting the production and marketing of asbestos. The officers named were D. E. Green, president; Barry De Rose, vice-president, and Jack Neal, secretary-treasurer.

The *Defiance* mine, a group of 15 claims in the Turquoise district of Co-

WHEREVER MINERALS ARE PROCESSED...



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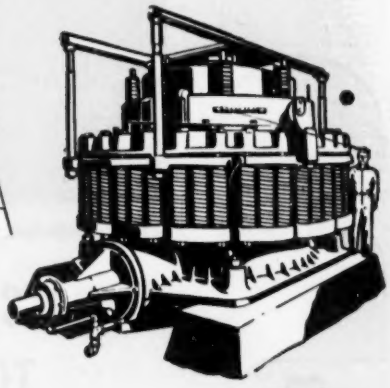

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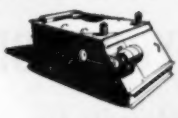

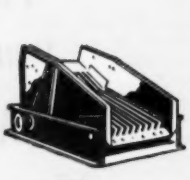

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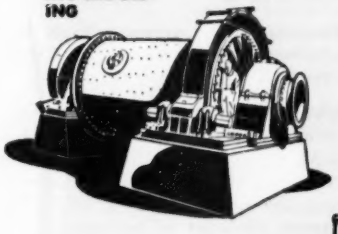

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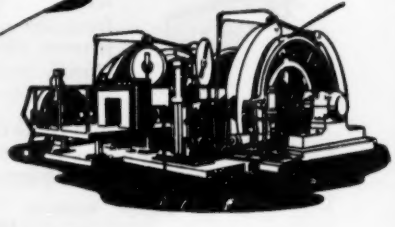
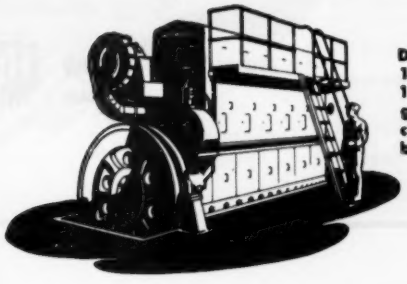


MINE HOISTS



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chise County, is being leased by Giacoma Brothers of Tombstone, Arizona. About 75 tons of silver-lead ore are being mined monthly from room and pillar and stulled stopes. The shaft is 75 feet deep. Four men are employed.

The *McVay Mining Company*, at Vicksburg, Arizona, is working a small crew on the *Three Musketeers* scheelite claims. So far all work has been in open cuts, using jackhammers and hand shovels. Fletcher Merrill is manager.

Grissoms, Inc. has a small crew employed in development work at the old 79 mine. This group of 26 claims, in the Banner Mining District of Gila County, is owned by the *Callahan Zinc-Lead Company*, and has an important production record. M. C. Grissom of Winkelman, Arizona is manager.

The *Shooting Star Tungsten Company* is reported to have reactivated the old *United Tungsten* mine located in the Morongo district of San Bernardino County, California. Some ore has already been shipped to the Jaylite mill at Barstow. The mine was a producer during World War I, and 1,000 feet of workings were driven during that time. The scheelite is said to occur in a contact zone between granite and marblized limestone.

The *U. S. Manganese Corporation*, with head offices in Phoenix, Arizona, has contracted for and is in the process of moving and installing equipment for mill and mine operations at the *Placer Del Ora* lease in San Bernardino County, California. The lease includes about 160 acres in the Atolia Rand mining district. The corporation has spent eight months in studying the problems of large-yardage ore handling and processing. When completed, the Placer Del Ora operation will be able to handle 1,000 yards per 8-hour period. In addition to U. S. Manganese ore, the operation will be able to handle ore from smaller producers.

A small experimental copper leaching plant is being operated by H. V. Underwood and associates at the *Antelope* mine, 35 miles southeast of Hollister, California. Copper-bearing material from a 70-foot drift is placed in concrete leaching vats. After thorough saturation, it is diverted to the recovery vat where copper is precipitated in metallic form by the addition of tin cans. The precipitates are then shipped to a smelter for refining.

Goldfield Great Bend, Ltd. of Reno, Nevada has acquired the *Siskon* mine near Happy Camp, California, and the name of the firm has been changed to the *Siskon Corporation*. H. B. Chessher who holds the lease on a life-time basis will be president and general manager; Hubert B. Chessher, jr. will be the mining engineer and superintendent in charge of operations at the mine. Completion of a cyanide mill is planned by the end of the year. The Siskon mine is a group of 44 lode mining claims, one placer mining claim, and one mill-site, located in the Dillon Creek mining district of Siskiyou County. Previous operators attempted to develop a pyrite reserve for a future sulphur plant but the ore proved to be too low in sulphur content. Siskon Corporation plans to develop the property as a gold mine.

Testing of the world's first commercial atomic power plant may fall to the Nevada mining industry. The Atomic Energy Commission is said to be interested in setting up an experimental plant and Senator George W. Malone of Nevada has urged that his state be chosen for the site. Specific recommendation is that an atomic power plant be erected at Ruby Hill, a few miles east of Eureka, on the property of the *Eureka Corporation, Ltd.* Operations at Ruby Hill have been practically at a standstill for several years because of the company's inability to find a low-cost way of dewatering its 2,500-foot Fad shaft. It is considered highly possible that the atomic plant could provide the needed low-cost electrical energy for the project.

Production from seven new tungsten mining properties in eastern Nevada is expected to start shortly. The mines are located at Mt. Wheeler, Comet, Patterson, Cleve Creek, Geyser, Shoshone, and Pioche. *Combined Metals Production Company*, owner of the properties, is now building a tungsten mill at Castleton, Nevada to handle this ore

The *Ford Motor Company* is reported to be conducting diamond drilling exploration in the Lovelock, Nevada area. Almost 50 carloads of iron ore are being shipped out of the Lovelock territory every day, destined for Japan via Pacific Coast ports. The ore is a mixture of hematite and magnetite, with some of the ore running as high as 60 percent iron.

Nevada Scheelite Division, a subsidiary of *Kennametal, Inc.* of Latrobe, Pennsylvania, has completed enlargement of its mill near Rawhide, Nevada. This property has been a top tungsten producer in the state for many years, and was acquired by Kennametal from Nevada Scheelite, Inc. in 1951. In the same vicinity, the *Nevada Pacific Development Company* is increasing its output of tungsten ore from 30 to 60 tons per day. A new mill is in operation, equipped with a crusher, rolls, and three concentration tables. The company owns two mines near Gabbs, Nevada.

The *Bruhi Enterprises* in Nevada have bought the *McNamara* lead-silver mine in the Palmetto mining district of Esmeralda County. The property covers three claims formerly held jointly by Margaret McAuliffe, Edith Barcus, and Emil Perolaz. The mine has been worked sporadically in recent years. About 3,000 tons of mill-grade ore are reported to be stockpiled, with another 3,000 tons in sight underground. The *Anaconda Copper Mining Company* is reported to have taken an option on another Bruhi holding, the *Argentite* mine near Silver Peak. The company mill was not included in the arrangement and it is currently idle, awaiting new supplies of ore from other properties. The Bruhi Enterprises are composed of E. R. Hines of Reno and Avery Brundage of Chicago.

The *Key West Nickel and Copper Corporation* has taken over the old *Key West* mine about 15 miles from Bunkerville, Clark County, Nevada. A. F. Carper of Las Vegas is president and general manager; John McKean of *Alloy Steel and Metal Company* of Los Angeles is secretary and treasurer. A leaching plant for the removal of the copper and nickel values is now being placed in operation to treat several thousand tons of oxidized ore. Later, a flotation plant will be erected to treat the sulphide ore that is blocked out underground. The platinum content in the ore which assays as high as one half ounce per ton will be recovered by gravity methods. The Key West was originally operated over 50 years ago and some ore was removed about 25 years ago. It has been idle since then.

Gold of Ophir Placers, Inc. reports finding values of gold and tin in its dredging operations at Placeritos, 40 miles north of Lovelock, Nevada. A keystone churn drill has been used in testing the ground, which consists of 25 claims on 3,920 acres.

Black Rock Desert Mineral Company is increasing its mill capacity from 80 to 400 tons of sulphur ore per day, and is also installing a refining unit designed to produce 125 tons of pure chemical product a day. The latter will be shipped to sulphuric acid manufacturers. Ore is mined from open pits by power shovels. The property is located at Sulphur, Nevada, 60 miles west of Winnemucca.

United Minerals Corporation of Salt Lake City, Utah, reportedly will develop the old *Rip Van Winkle* mine in the Tuscarora district of Nevada. Initial development work will include retimbering of an 8,000-foot tunnel and an 800-foot shaft. The firm expects to produce lead, zinc, and silver.

The dip in lead and zinc prices has caused many small producers in New Mexico to close down at least temporarily, according to State Mine Inspector John A. Garcia. He estimates that about 90 percent of the many small operations have suspended mining. There are about 45 small operators in the state—those employing 15 men or less—who produce about 10 percent of the lead-zinc ore mined in New Mexico. Big producers like *American Smelting and Refining Company, U. S. Smelting, Refining and Mining Company, Empire Zinc Company*, and *Peru Mining Company* are not expected to curtail operations unless prices drop further.

The long-quiet mining area in Lincoln County, New Mexico, southwest of Vaughn, is reported to be showing increased mining activity. A bastnaesite mine and mill 10 miles south of Corona, expects to be in operation soon. It was purchased last fall by *Lindsey Light and Chemical Company* from W. M. Heim and E. D. French. An old fluorspar mine in the area has also been resurveyed and some restoration work is going on, while at the L. D. Strickland Ranch, 25 miles southeast of Corona, iron ore is expected to be shipped shortly to *Colorado Fuel and Iron Corporation* at Pueblo, Colorado.

A search for critical tungsten in the *Ortiz Mine Grant* in southwestern Santa Fe County, New Mexico, is under way. The mining firm of *Potter and Sims* (operators in the Tri-State district) has obtained a $77,520 DMEA contract for that purpose. The firm is reported to have leased the mineral rights on the grant and to have prospected and developed the property for several years. Scheelite was discovered in the area in 1947. G. R. Griswold of Albuquerque is supervising the operation.

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Calumet & Hecla To Open Osceola Copper Mines

The Osceola mines of the Calumet and Hecla Consolidated Copper Company in Houghton County, Michigan, will be unwatered, rehabilitated and re-equipped at a cost of approximately $6,000,000. The mines have been closed down since 1931.

This undertaking, believed to be the largest mine pumping operation in history, was made possible by the grant of an over-ceiling contract by the Defense Materials Procurement Agency. The DMPA has guaranteed the company a negotiated floor price of 25.25 cents a pound, which is five-eighths of a cent over the present ceiling, for up to 35,000 short tons of refined copper.

Producton of refined copper under the contract is to proceed at the rate of 7,125 short tons per year until June 30, 1962, or until a total of 53,000 short tons has been produced. Company officials estimate that capacity production of over 14,000,000 pounds of copper per year will be reached by 1955. The DMPA contract will consume only about half of the Osceola reserves, according to E. R. Lovell, president of Calumet and Hecla. He also stated that the Osceola copper will replace production from several of the company's other mines which are expected to be exhausted within the next few years, and that therefore no over-all increase is expected.

The dewatering and rebuilding is expected to take 2½ years to complete, with 18 months for the dewatering and a year for rebuilding. Seven billion gallons of water will be pumped an average vertical distance of 1,600 feet by specially constructed submersible pumps having a total capacity of 13,000,000 gallons per day.

New DMPA Mica Purchase Depot for New Hampshire

A purchase depot for high-grade mica will be established at Franklin, New Hampshire, and will be operated by the Emergency Procurement Service of General Services for the Defense Materials Procurement Agency. Incentive prices will be paid to encourage the discovery, development, and production of domestic mica.

The government, according to DMPA Administrator Jess Larson, is primarily interested in hand-cobbed or processed mica that will yield satisfactory quantities of strategic grades of the material, which is used largely as an insulator in electronic devices.

Forty-five pounds of block or film mica are the minimum individual shipments that will be accepted at the purchase depot, while hand-cobbed mica must be offered in lots of at least 1,000 pounds. Prices paid will depend on the quality of the mica, ranging from $3 a pound for No. 5½ and No. 6 "heavy stained" mica, up to $70 a pound for No. 3 and larger "good stained and better" processed block and film mica. For specified hand-cobbed mica, $600 per short ton will be paid.

The domestic purchase program is set up to run to June 30, 1955, or until total block, film and hand-cobbed mica delivered to and accepted by the government has reached the equivalent of 25,000 short tons of hand-cobbed mica. Purchases made under this incentive program will be for the national stockpile and other essential needs.

Specifications for acceptable mica and the price schedule may be obtained rom the GSA Regional Office, 620 Post Office and Court House, Boston 9, Massachusetts.

Davison Begins Production Of Triple Superphosphate

Construction of a plant for the production of triple superphosphate has been started at Ridgewood, Florida, between Bartow and Mulberry, by the Davison Chemical Corporation.

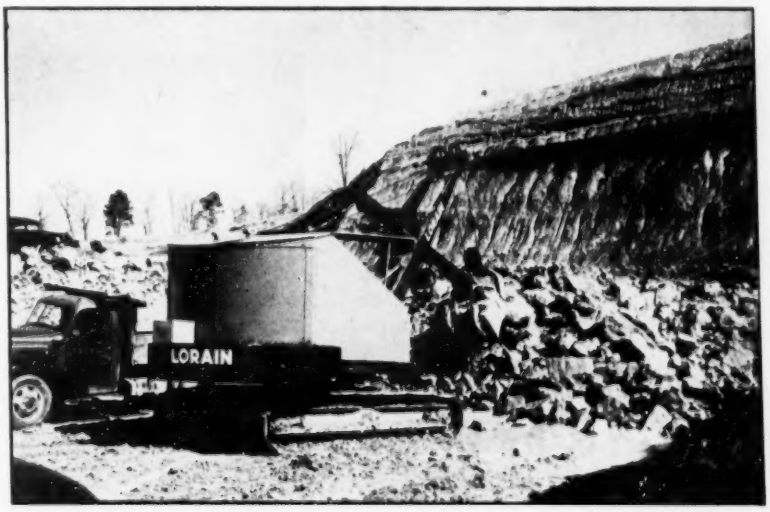
Davison, a long-time producer of phosphate rock and normal superphosphate, is entering the field of triple superphosphate manufacturing for the first time, citing as the reason rising costs of fertilizer production, which have tended to make the concentrated triple superphosphate a more economical source of phosphate applied to land. (Phosphate is an essential ingredient of the so-called "high analysis" fertilizers.)

The new project, which is expected to be complete by October 1, 1953, is part of a $25,400,000-dollar expansion program being undertaken by Davison. Another major project is a plant for production of petroleum cracking catalyst at Lake Charles Louisiana.

CENTRAL STATES

The *Aluminum Ore Company* of East St. Louis, Illinois, will expand its facilities to increase production of synthetic cryolite. The company has been producing this material exclusively for its parent company, *Aluminum Company of America*, but now it will increase its annual production by approximately 11,000 tons to help meet the demands of the country's expanding aluminum program. An agreement with the government provides for the sale of 42,600 short tons of synthetic cryolite between 1952 and 1956, at a base price of 13.9 cents a pound for 91 percent cryolite.

Fire destroyed the derrick, hopper, compressor plant, and change house at the *Muncie* mine, located about 6½ miles from Baxter Springs, Kansas. The zinc-lead mine is now operated by the *Bilharz Mining Company*. Buildings, machinery, and equipment were considered a total loss. The origin of the fire is undetermined at this writing.



BAUXITE OPEN-PIT MINING IN ARKANSAS

Essential bauxite ore needed in the manufacture of aluminum is mined here at Sweet Home, Arkansas, where the Dulin Bauxite Company operates open-pit mines. Thew Lorain shovels, powered by Caterpillar Diesel engines, load about 250 tons per day at the Dixson pit, and about 400 tons per eight hours at the nearby Ratcliff pit. A Caterpillar Diesel tractor and bulldozer are used at the Ratcliff to clean up after blasting, to build roads in the pit, and to help trucks with heavy loads up steep inclines. The tractor and other equipment work about nine months of the year opening up new pits and extending old pits. Arkansas is the leading producer among the four states which account for the total domestic supply of bauxite in the United States.

Jefferson Lake Sulphur Company reports that for the first half of this year production of sulphur increased 41 percent and shipment increased 70 percent over the same period in 1951. The production increase was due largely to the operation of the Starks Dome plant in Calcasieu Parish, Louisiana, which began production in June 1951. Seven exploration wells have been completed at the Black Bayou Dome in Cameron Parish, and additional wells are being driven. Although sulphur has been indicated, sufficient tonnages have not yet been proven to justify erection of a plant.

An agreement concluded between the DMPA and *E. I. du Pont de Nemours & Company* will provide production of an additional 13,500 short tons of titanium sponge metal over a five-year period. This is said to be three times the plant's present capacity. The government will advance $14,700,000 to du Pont for expansion of its titanium facilities at Newport and Edge Moor, Delaware. The money will be repaid with interest, as salable titanium sponge is produced by the additional facilities. The agreement is similar to one made with the *Titanium Metals Corporation of America* which calls for production of 18,000 tons of titanium sponge over a five-year period.

Tennessee Coal and Iron Division of *U. S. Steel Company* will not reopen *Ishkoodauon* ore mine No. 14 at Birmingham, Alabama. The mine, which was closed down during the recent steel strike, will not be abandoned. Officials say that "if our raw material requirements should in the future be altered, we will be able quickly to put it back into production." Stand-by forces will maintain the mine with that possibility in view. About 350 employees are affected by the shut down. They are being given preferential treatment in hiring requirements as they move to other parts of TCI.

An iron ore expansion goal of 147,000,000 long tons of annual capacity by 1955 has been set by the Defense Production Administration. To attain this goal, says DPA, it will be necessary to provide new capacity of 57,000,000 gross tons beyond that available in 1950. Of this additional tonnage, about 8,000,000 long tons represents replacement to compensate for the decline in output from old mines. All increases will be provided from domestic iron mines or from foreign mines operated by American companies. The manganese ore goal has been set at 2,500,000, long tons in 1954. The supply in that year would be about 630,000 long tons above 1950 manganese supply of 1,870,000 long tons from domestic mines and imports.

Construction of the huge Fairless Works steel mill being undertaken by the *U.S. Steel Corporation* at Morrisville, Pennsylvania is four or five months behind schedule. The mill was started in March 1951 and production was expected early this summer, but engineering changes, material shortages, and bad weather have slowed things down. The blast furnaces are now expected to be lighted in the fall, and full production may be reached next summer. When completed, it will produce 1,800,000 tons of steel annually.

A new $2,600,000 U.S. Bureau of Mines experiment station will be built at Morgantown, Virginia. A contract has been awarded to the *Southeastern Construction Company* of West Virginia. Principal activities planned for the station include research on the production of synthesis gas from coal; mining studies and health and safety work now carried on in rented quarters at Fairmont, West Virginia; and petroleum and natural gas research for the Appalachian region.

As a result of increased production capacity, private industry now expects to be able to meet the full requirements of the military for elemental phosphorus for munitions purposes. Military requirements for 1953 would amount to about 22,000 tons of elemental phosphorus or about 5,000 tons over 1952. Thus far, contracts have been placed for 7,000 tons. The Department of Agriculture's preliminary estimate of requirements for phosphatic fertilizers in the form of concentrated superphosphate would amount to 3,485,000 tons by 1955, or about 1,400,000 tons over the 1950-1951 usage. This calls for an increase in production of about 400,000 tons over the 1952-53 requirements.

A production goal for spodumene of 50,000 tons annually by 1955 has been set by the Defense Production Administration. Members of the Spodumene and Lithium Ores Business Advisory Committee have advised the DMPA that this goal can be met. Domestic reserves of spodumene and other lithia-bearing ores are considered ample. The expansion of

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production facilities for processing these ores is expected to require only limited government assistance, although in many instances production capacity may be boosted by 100 percent or more.

Two certificates of necessity have been granted by the DPA to *Foote Mineral Company* covering increases in production of lithium chemicals. One certification for $2,515,000 carries an 80 percent amortization and is for production of lithium chemicals at Sunbright, Virginia. The other certificate is for $144,828 carrying a 70 percent amortization and is for mining and concentrating of spodumene at Kings Mountain, North Carolina. These represent only a portion of the $3,000,000 expansion program which Foote has planned for 1952 and 1953 which will more than double the present U.S. production capacity of essential lithium chemicals.

IRON RANGES

With the settling of the steel strike, the problem of reopening the mines began. As an example of what the companies were facing, *Oliver Iron Mining Division* of *U. S. Steel Company* estimated that it would take from 10 days to two weeks before underground mine operations would reach normal production. Because of abnormal rainfall during the strike period, and lack of maintenance, roads, tracks, and disposal dumps at open-pit mines, suffered considerable damage. All rail shipments to steel-making facilities did not begin until iron ore boats which had been tied up during the strike could be loaded and the vessel movement became normal.

The *Ford Motor Company* is searching for new mineral formations on its properties in the four-county area in the upper peninsula of Michigan. Ford is negotiating the lease of its *Titan* mine property near Three Lakes, Michigan to *Cleveland-Cliffs Iron Company*. The company reportedly considers the property too small for an independent mining operation, but it could be added to Cleveland-Cliffs' *Ohio-Norwood* operations. Ford and Cleveland-Cliffs, together, formed the *Humboldt Mining Company* which has started mining operations in the Marquette Range at Humboldt, Michigan.

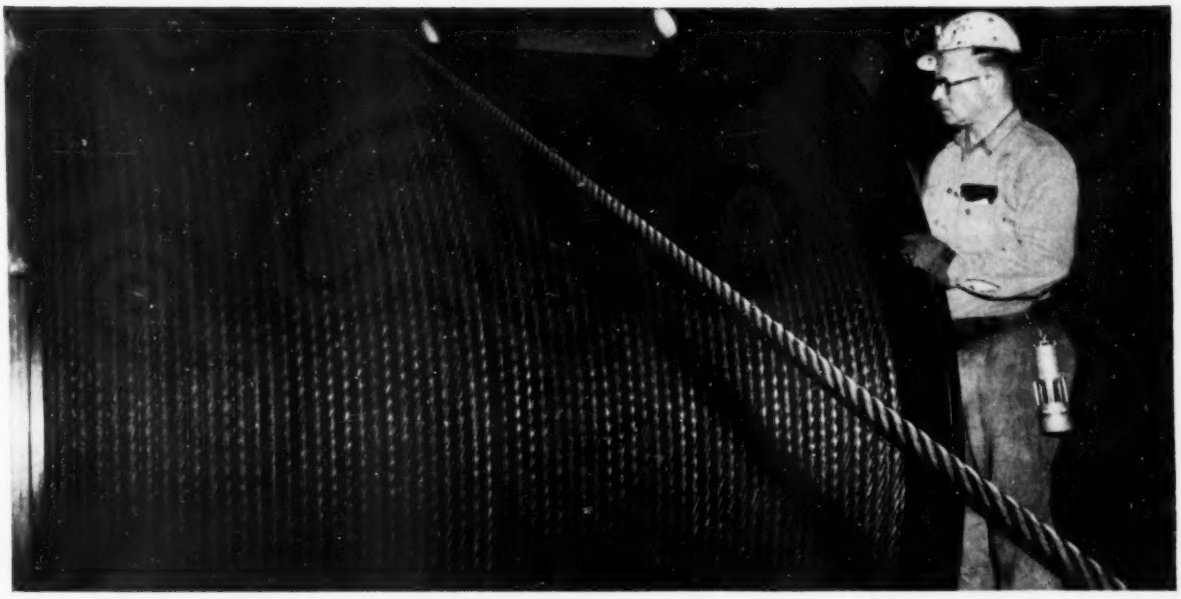
Development work continued at four Iron County iron mines in Michigan during the recent steel strike. They are the *Cannon* mine, east of Stambaugh, of the *M. A. Hanna Company;* the *Cayia* mine, east of Crystal Falls, of *Inland Steel Company;* the *Carpenter* and the new *Fortune Lake* open-pit development, both *Pickands Mather & Company* properties.

Peter Kiewit & Son of Omaha, Nebraska, have been awarded the contract for stripping the *Fortune Lake* open-pit mine in Michigan for *Pickands Mather & Company*. The pit is on the site of the *New Bristol* property which had a brief existence 30 years ago. Heavy-duty, earth-moving equipment is being moved to the site. The project also calls for the installation of about two miles of railroad track, including a relocation of the main Milwaukee road line between Crystal Falls and Iron River. The area to be stripped now is about ¼-mile long and 400-feet wide. After the open pit has been exhausted, the remainder of the ore body may be mined by the underground method.

A drill hole, said to be the deepest ever drilled in the United States in search of iron ore, had reached a depth of 5,862 feet on July 28th, drilled by the *Cleveland-Cliffs Iron Company*. Hole No. 43 is west of Ishpeming, Michigan, and was started November 28, 1950. Seven employes of Cleveland-Cliffs worked on an around-the-clock basis to set this new record in iron ore exploration drilling.

Bids have been called for by *Pickands Mather & Company* for the construction of railroad track facilities at the old *Lawrence* mine in Michigan where the company has been rehabilitating the old Carpenter shaft to serve the Lawrence. The contract requires the building of two miles of track along an old grade.

Preliminary geologic maps and structure sections of part of the Cuyuna iron-bearing district in the vicinity of Crosby and Ironton, Minnesota, are now available for inspection. They represent a compilation of geologic data obtained by detailed mapping of the iron mines during the period from July through October 1951. The material is on file at the office of the Geological Survey at the Crosby Theatre Building in Crosby, and at the Minnesota Geological Survey office at the University of Minnesota in Minneapolis.



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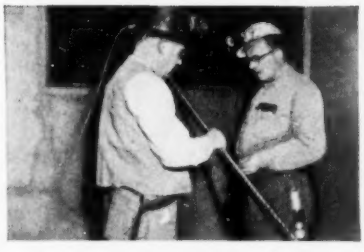

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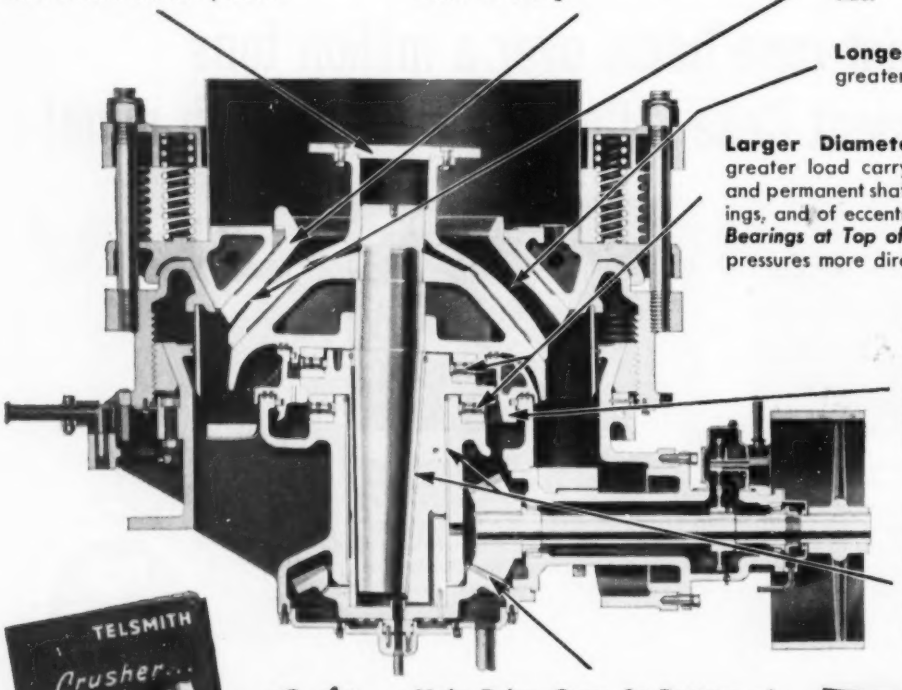

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precipitates—ROCKY MOUNTAIN

Calera's New Cobalt Plant Started at Garfield, Utah

The Calera Mining Company's cobalt refinery at Garfield, Utah has been placed in operation under the supervision of engineers of the Chemical Construction Corporation of New York, New York. Chemico engineered and supervised plant construction. H. A. Pearse, vice president of Calera's parent company, Howe Sound Company, witnessed initial operations.

The plant is the first commerical-sized unit to use the recently developed Chemico process. It will treat 35 tons per day of cobalt-copper (20 percent Co) concentrate from Calera's Blackbird mine in Idaho. The new refinery is scheduled to produce about 2,000 annual tons of 95 percent cobalt powder.

Silver Bell Mill Recovers Hubnerite From Au-Ag Ore

The Silver Bell Mines Company has installed a tungsten recovery unit in its mill at Ophir, San Miguel County, Colorado, according to E. H. Sanders, president. The mine's gold-silver-lead ore contains a small amount of hubnerite which the new unit recovers.

The company has a crew of men driving three headings on the Carbonero and Panama veins in the Carbonero lead-zinc mine above Old Ophir under the direction of Tim McCluer. To speed mine development, a third 350-cubic-foot-per-minute air compressor has been installed. A new mucking machine and cars have also recently been placed in operation.

Glen A. Smith is in charge of the Silver Bell mine, John Lucas, Jr. is mill superintendent, Melvin Carlson is resident engineer, and A. A. Smith is general superintendent of all of Silver Bell's mining operations.

The *Reynolds Mining Corporation* has received a Defense Production Administration Certificate of Necessity for $393,481 permitting an accelerated amortization of fluorspar mining and milling plants at Poncha Springs, Colorado. Seventy percent of the certified amount was declared eligible for the fast tax amortization.

The *Cordillera Corporation* has let a contract to James Capp and Al Eggers of Breckenridge, Colorado, to drive the Ling Tunnel through North Star Mountain. N. Harry Dunn, corporation vice president, will be in charge of the work. The tunnel portal is in Park County, and after the contract is completed production from the Ling group of mines can be started.

Mining activity has increased in the Rico district, Dolores County, Colorado during the summer months. The *Knickerbocker Mining Company* has been making regular shipments of lead-zinc ore from its *Union Carbonate* mine to a Utah smelter. Development of the mine through the Paymaster Tunnel was started in 1949. The company is a partnership of E. C. Baer, Rico; N. J. Knickerbocker, Virginia, Minnesota; and K. L. Erickson, Bagdad, Arizona. A second active company is the *Dolores-Springs Mining and Milling Company* which has had a crew of men at work under the supervision of W. D. Peregrine.

The *Uranium Ore Producers Association* is leading the fight with governmental agencies and commissions to establish policies for dealing with mining claims which may be invalid because of conflicts with oil and gas leases and public land withdrawals, according to association president W. E. Haldane of Grand Junction, Colorado. It has only recently become common knowledge that an amendment to the Federal Leasing Act passed in 1946 casts a cloud over ownership titles to hundreds of Colorado Plateau uranium-vanadium claims. The association is seeking to have Congress pass remedial legislation to nullify or modify the amendment so as to protect the miner's rights and insure continuance of uranium ore production.

The *Montana Mining and Development Company* is operating its *Lamartine* mine in the Trail Creek district, Clear Creek County, Colorado, one shift per day. George H. Anderson is mine superintendent and James Anderson is manager. One stope is being mined in addition to development work.

The *U. S. Atomic Energy Commission* has announced that plans are being made for a uranium ore buying station for the rapidly expanding Black Hills uranium district. The depot will probably be built near Edgemont, South Dakota, south of the Southern Black Hills. The *United States Vanadium Company* is one of the largest operators in the district and has secured mining rights on

Dry & Wet Screen Utah Manganese Ore

The King Manganese Corporation is producing high-grade manganese concentrate from its washing plant in Kane County, Utah, 35 miles east of Kanab. The plant, pictured above, is equipped (from left to right) with a 27 by 4.5 foot trommel screen, Diester vibrating screens, and concentrate bin. The manganese occurs as nodules, up to a diameter of two inches, in the Chinlee formations of Triassic age. The nodules are found in a bed of bentonitic clay up to 10 feet thick, and constitute about 10 percent of the bed. Up to 60 feet of overburden was first stripped from the bed, and it was then mined by a shovel-loader. The feed end of the trommel screen is equipped with lifter bars to aid in breaking the clay loose from the nodules. Three sections of screens—¾ inch, ½ inch, and ⅜ inch in size—separate the clay from the nodules. The oversize (nodules) drops by gravity to the vibrating screens, and the undersize (clay tailing) is discarded. The vibrating screens are equipped with wash water sprays under 40-pounds-per-square-inch pressure which washes the last adhering clay off the nodules. Initial production of the plant was 50 tons per week of high-grade concentrate. Throughput of ore is being increased so that concentrate production will be doubled. B. Geekie Cobb is consulting engineer for the corporation.

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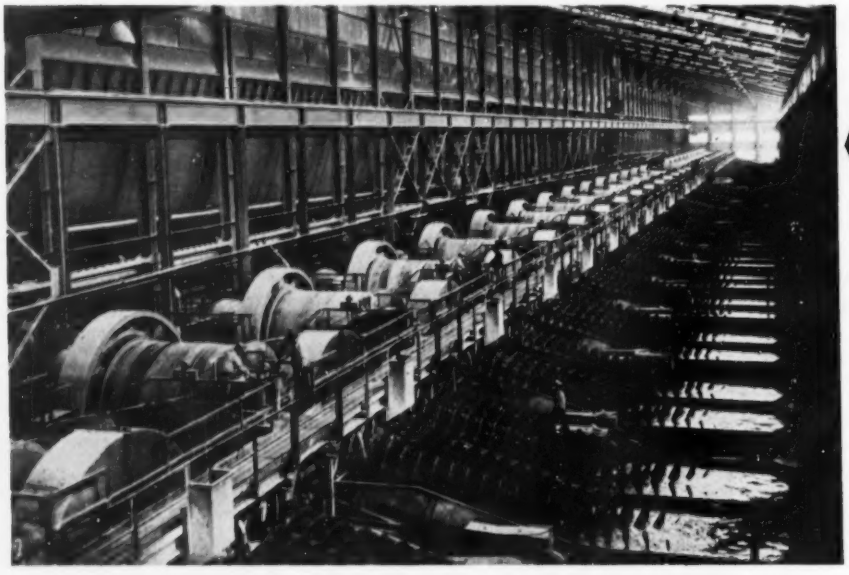

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the 120-claim *Cord* group in Craven Canyon.

The *Homestake Mining Company*, largest U. S. lode gold producer with mines at Lead, South Dakota, had an earned net income of $1,973,164 before percentage depletion in the first six months of 1952, according to Guy N. Bjorge, vice president and general manager. Homestake is currently employing 1,750 men in its gold mining operations.

John Ross of Custer, South Dakota, has received a DPA loan from the *Reconstruction Finance Corporation* for $45,545. The loan funds will be used to buy mining machinery and equipment, and for working capital.

The *Sodium Sulphate Corporation of America* is making plans for the construction of a $900,000 sodium sulphate plant near the company's holdings at Alkabo, North Dakota. In addition to the processing plant, a railroad spur, access roads, pumping plant, brine pipe lines, and recrystallization reservoirs will be built, according to George F. Kremm, vice president. An application is now on file for plant construction authorization with the National Production Authority.

WYOMING

The Intermountain Chemical Corporation's $16,000,000 trona processing plant and mine west of Green River, Wyoming is 80 percent completed. The 1,600 foot deep production shaft has been holed through into the mine workings and the new hoist has been installed inside the hoist building. Construction of the shipping and packing plant is under way while buildings have nearly been finished for the six storage silos, filter plant, calcining plant, and machine shop.

Formosa is reported to be interested in buying 20,000 tons of natural rock phosphate from a deposit in Wyoming. Barrett & Mangan, agents for the producers of the mineral, report that the deposit, located on a 900-acre parcel, is practically inexhaustible. A one-car "token" shipment some time ago is said to have brought increased demand from both domestic and foreign buyers.

UTAH

The nation-wide settlement of the CIO steel workers' strike did not mean that the *Columbia Iron Mining Company* resumed operations because the miners demanded settlement of a local issue. Columbia supplies iron ore for the Geneva, Utah plant of the *U. S. Steel Corporation*. Employees claim an additional 8½ cents hourly pay boost retroactive to December 1, 1950, and a job reclassification.

The *U. S. Atomic Energy Commission* has announced that a site for a uranium-vanadium ore purchasing depot has been picked at Greenriver, Utah. Frank MacPherson, manager of the Colorado Raw Materials Office, has announced that construction of necessary sampling facilities is scheduled for this year. The purchase depot is expected to facilitate marketing of ores mined on the San Rafael Swell, Temple Mountain, and from the eastern and southern flanks of the Henry Mountains.

The Washington, D. C. office of the Raw Materials Procurement Division of the *U. S. Atomic Energy Commission* has reported that construction of a new uranium-copper processing plant at Hite, San Juan County, Utah has been certified and that money is available for its construction. The plant will be built under contract by private companies, and it will take between 12 and 18 months for construction.

The *Chemical Corporation of America* has received an OPS price of $104.00 per ton for the sulphur it is producing at its Sulphurdale, Utah plant. W. D. Maycock is general superintendent and C. R. King is consulting engineer. The company is processing 25 percent sulphur ore in its 200-ton-per-day flotation pilot plant. Open-pit mining is used.

The *Bullion Monarch Mining Company* has been granted a DMEA exploration contract for its *Bullion* uranium claims at Marysvale, Juab County, Utah, according to Robert N. Cooper, secretary. The government furnished 90 percent of the $27,730 to be spent for exploration. The company has been shipping ore to the U. S. Atomic Energy Commission's stockpile at Maryvale from three sections of the mine. Underground exploration will be guided by the surface diamond drilling of certain portions of the claims carried out in the past by the AEC. The new exploration project calls for three cross cuts, a 100-foot winze and a raise from the main adit level.

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(1-16-52)

precipitates—NORTHWEST

Marketing Conditions Close Largest Antimony Mine

The nation's largest antimony producer, Yellow Pine mine at Stibnite, Idaho, has been closed down by the Bradley Mining Company because of marketing conditions. The mill and smelter have also ceased operations. Only a skeleton crew will be left to continue exploration work until the winter.

Reopening of the property is contingent upon a change in the market. Once winter snows begin, however, it will be impossible to open the property until spring of 1953, at the earliest. Once a ghost gold camp, the property rose to become No. 1 producer of the nation's antimony oxide, supplying 90 percent of domestic output.

Tunnel Driving Starts At Montana Tungsten Mine

Work has started on two exploratory tunnels at the Lost Creek tungsten property of Minerals Engineering Company in Beaverhead County, Montana. One tunnel is being driven with a compressed-air-powered mucking machine and trammer; the other is equipped with a Diesel-powered, tractor-mounted loader.

Two major Powellite (calcium-molybdenum-tungstate) deposits have been exposed over widths running from 27 to 45 feet, and from 600 to 1,100 feet in length. A DMEA contract covers the tunneling project.

In addition, Minerals Engineering is stripping the surface, and has also installed a diamond drill for exploratory drilling below the tunnel levels.

Contracts have been signed for construction of a sulphuric acid plant at *Sullivan Mining Company's* electrolytic zinc plant near Kellogg, Idaho, according to J. B. Haffner, general manager of *Bunker Hill & Sullivan Mining and Concentrating Company* which owns the Sullivan firm jointly with *Hecla Mining Company*. The plant would have an initial production of 250 tons of acid daily from sulphur dioxide recovered from smelter fumes.

Atlas Mining Company of Mullan, Idaho, has accepted an offer to participate equally with *Hecla Mining Company, New Jersey Zinc Company* and *Newmont Mining Corporation* in development of the *Amazon-Dixie* property and adjoining claims in Mineral County, Montana. Atlas already had equal participation rights with the three big mining firms in an eight-mile-long area from west of the Idaho-Montana border almost to Wallace. J. W. Greenough, a Spokane director, said the Montana acquisitions can be developed from the Atlas shaft, now being deepened to the 2,400-foot point. Atlas has levied its first assessment in many years.

General Mines Corporation is offering 1,000,000 shares of Class A, non-assessable common stock at 12½ cents a share in order to bring the mine to the production stage. The firm holds property on Little Pine Creek southwest of Kellogg, Idaho. About $225,000 has already been spent on the property, plant, equipment, and development work. About a mile of crosscutting and 220 feet of shaft sinking have been completed. The company plans to do considerable exploration work from the shaft bottom level to the east property line which adjoins the *Page* mine of *Federal Mining and Smelting Company*. A continuation of a raise toward the surface is also planned which is expected to cut three known veins. When fully opened, it is believed that they could furnish enough ore to keep a 50-ton mill running for five years. The ore is essentially gold, with some values in silver, copper, antimony, lead, and zinc.

A new 950-foot level has been opened by *Day Mines, Inc.* at its *Dayrock* mine, north of Wallace, Idaho. A station and pockets have been cut and crosscutting to the vein system is under way. The Dayrock shaft was extended from the 800 to the 1,100-foot level several months ago. Two other levels are planned but will not be started until development work on the 950 level has been evaluated.

Golconda Lead Mines, Inc. of Wallace, Idaho has completed modernization and over haul of its concentrator. The first mill run has been made and results have been satisfactory, Reagent consumption has dropped and the new Fagergren flotation units are said to handle more feed at the cell end of the milling process. The capacity of the ball mill is 200 tons per day.

Two new exploration crosscuts are being driven to the Yankee Girl vein by the *Sunshine Mining Company* which is developing the property of *Metropolitan Mines Corporation* on a profit-sharing arrangement. One crosscut will be extended south from the 3,400-foot level of the No. 4 shaft. The other will be driven on the 3,100 level from a point near the No. 5 Sunshine shaft. The 3,400-foot level crosscut will be driven under the high-grade silver ore stope on the 3,100 level. The 3,100 level crosscut is expected to cut the vein on its easterly extension about 1,100 feet east of the face of the present Yankee Girl drift on this horizon.

Northfield Mining Company reportedly will spend $102,900 exploring for cobalt and copper in Lemhi County, Idaho under an agreement signed with the DMEA. The government's share will be $72,030. Work will consist of bulldozing, diamond drilling, and tunneling on ground near *Calera Mining Company's Blackbird* cobalt mine. George Mitchell is resident manager.

Cobalt-copper exploration will be carried out in Lemhi County's Blackbird mining district by *Montana Coal and Iron Company* of Red Lodge, Montana, under a $23,000 DMEA project.

Federal Mining and Smelting Company is preparing to open a new 2,400 level at its *Frisco* mine near Gem, following a 200-foot shaft deepening project.

American Smelting and Refining Company is pushing development work in three headings at the *Vulcan* deep development project west of Wallace, Idaho. About 800 tons of lead-silver development ore was treated in June, first full month of operations since resumption of underground work following shaft repairs.

A. P. Smothers of Shoup, Idaho, reports discovery of extensive fluorspar deposits on the Crystal Cluster and Broken Halter groups of claims in the Salmon River canyon. He said the main vein averages about 20 feet wide and that work to date indicates a strike length of about four miles.

Hecla Mining Company of Wallace, Idaho has increased its holdings in the Coeur d'Alene district's east silver belt south of Mullan. It has acquired the *Cee Gee* group of 10 claims from C. H. Hunter of Coeur d'Alene under lease and option agreement similar to one made a year ago with *East Silver Belt Lead Mines, Inc.* The east Silver Belt firm recently purchased the adjoining *Glenclif* group of 10 claims from Hunter.

Mullan Silver-Lead Company of Wallace, Idaho has added to its *Mineral Farm* group of 15 claims west of Mullan by purchasing the *East Alice* group of claims from the Foss family of Mullan and Spokane. The property is adjoined by the

Chromite Concentrate Purchase Price Schedule At Grants Pass, Oregon and For Montana Production Based on Chromite Content and Chromite to Iron Ratio

(For Lump Ore Add $5.00)

	Grants Pass Base Price Chromite to Iron Ratio															*Montana*
Percent Cr2O3	3 to 1	2.9 to 1	2.8 to 1	2.7 to 1	2.6 to 1	2.5 to 1	2.4 to 1	2.3 to 1	2.2 to 1	2.1 to 1	2 to 1	1.9 to 1	1.8 to 1	1.7 to 1	1.6 to 1	1.5 to 1
48	$110	$107	$104	$101	$98	$95	$92	$89	$86	$83	$80	$77	$74	$71	$68	$65
47	107	104	101	98	95	92	89	86	83	80	77	74	71	68	65	62
46	104	101	98	95	92	89	86	83	80	77	74	71	68	65	62	59
45	101	98	95	92	89	86	83	80	77	74	71	68	65	62	59	56
44	98	95	92	89	86	83	80	77	74	71	68	65	62	59	56	53
43	95	92	89	86	83	80	77	74	71	68	65	62	59	56	53	50
42	92	89	86	83	80	77	74	71	68	65	62*	59	56	53	50	47
41	89	86	83	80	77	74	71	68	65	62	59	56	53	50	47	44
40	86	83	80	77	74	71	68	65	62	59	56	53	50	47	44	41
39	83	80	77	74	71	68	65	62	59	56	53	50	47	44	41	38
38	80	77	74	71	68	65	62	59	56	53	50	47	44	41	38	35**

* $62.00 Rejection Point Grants Pass. **Rejection Point For Montana.

old *Alice* mine, the *Federal Mining and Smelting Company's Morning* mine, and *Sullivan Mining Company's Star* mine holdings.

Vindicator Silver-Lead Mining Company stockholders have rejected an offer of *Silver Mountain Lead Mines, Inc.*, to purchase its three-claim property east of Mullan for 425,000 shares of Silver Mountain stock. Silver Mountain has an operating agreement with *Sullivan Mining Company*.

Bunker Chance Mining Company has obtained a 50 percent DMEA loan on a $152,530 lead exploration project in the Wardner, Idaho, district, according to Milton C. Levin of Portland, Oregon, secretary-treasurer. It also has obtained a perpetual lease of mineral rights under the city of Wardner and a lease-option on a 50-percent interest in the patented *Butler* lode claim in the same area. The company already owns a half interest in the claim. Robert B. Gammell is mining engineer in charge.

Sunshine Mining Company has started deepening its No. 5 winze, according to John Edgar, superintendent. Plans call for sinking 300 feet below the main 3,700-foot level and establishing new 3,850- and 4,000-foot levels. The 4,000 level will be about 1,300 feet below sea level. This will be the greatest depth attained by any mine in the Coeur d'Aline mining region of Idaho.

Idaho Lakeview Mining Company is increasing the capacity of its 100-ton mill, which has been producing about 40 to 50 tons daily. Production is from the *Hewer* and *Keep Cool* mines. About 200,000 tons of silver-lead-zinc ore has reportedly been developed. Jerome Drumheller is president.

Apache Mines near Hailey, Idaho has been acquired by Elmer C. Taylor of Boise. Eighty-three lead-zinc-gold-silver claims and a 150-ton selective flotation mill are included in the transaction. The *Pearl* group of 35 claims owned by Taylor and associates have been formed into *Pearl Mining and Milling Company*, which will be a subsidiary of *Idaho Mining and Reduction Company*, parent firm of Apache Mines. The parent firm is planning a shovel operation at a Hill City lead-zinc-silver property.

Silver Leader Mines, Inc. has been incorporated for $250,000 by Sennett S. Taylor, Marie B. Ringel and Edna E Bernardy, all of Wallace, Idaho.

Goldstone Mining Company has resumed work at its *Goldstone* mine near Salmon, Idaho, and has started development work at the nearby *War Eagle* property taken over under an operating agreement early this year. B. W. Porter of Seattle, president, said contract miners are extending the lower level Goldstone development adit and crosscutting from the bottom of the 65-foot War Eagle shaft to get under a promising high-grade lead surface showing.

MONTANA

American Chrome Company expects to start mining and milling of chrome ore in 1953. Preparations are under way at its *Mouat* chrome mine near Absarokee in Stillwater County, where camp facilities are already under construction. American Chrome is a subsidiary of *Goldfield Consolidated Mines Company*.

Miracle Mines, Inc. of Basin, Montana has been incorporated by Alfred Hedval of Basin, W. W. Durnen of Cody, Wyoming, and Paul Keller of Helena, Montana. The company is allowed to issue 50,000 shares of no par stock. Radioactivity is reported to be presented in its tunnel. Incorporated in Troy, Montana, is the *Esther May Corporation* with a capitalization of $50,000, by Lubin and Mary Loveland, and B. V. Lower, all of Eureka, Montana.

Lexington Silver-Lead Mines, Inc., has added zinc filters to its mine mill at Niehart, Montana, to permit milling zinc ore discarded when zinc prices were low, according to James A. Allen of Spokane, president. Returns are expected to help finance driving of an 1,800-foot crosscut and other mine development.

Albert Carlson of Basin, Montana, has obtained a 50 percent DMEA loan for a $24,900 lead exploration project at the *North Boulder* mine in Jefferson County.

A $20,600 contract for lead-zinc exploration at the *Silver Hill* mine in Jefferson County, Montana has been signed by the DMEA and John Guilio of Fuller, Montana.

A certificate of placer location on 120 acres in the Billings mining district of Yellowstone County, Montana, has been filed in the Office of the County Clerk and Recorder as the *Spotted Horse* placer claim. Discovery of bentonite is reported. Claimants are Elva Stratton, J. W. Bonawitz, Jr., Betty Bonawitz, Clark I. Israel, Dorothy J. Israel, and W. G. Stratton, each with 20 acres The land lies within Sections 24, 30, T.1 S., R.26 E., Yellowstone County. A discovery shaft 6 by 6 feet and 10 feet deep has been sunk in Section 30.

Articles of incorporation have been filed for the *Blue Dot Mining Company* of Dillon, Montana, with a capitalization of $50,000. Directors are Oscar Argerbright, and Mary D. Argerbright of Dillon, and Elizabeth T. Bluechel of Missoula.

A crosscut has been completed by *American Alloy Metals, Inc.* to its tungsten orebody on the *Ivanhoe* claim at Brown's Lake Beaverhead County, Montana. A development raise is now being driven. Diamond drilling has indicated that the ore is approximately 50 feet thick in this section.

The *Hidden Hand* mine in the Deer Lodge district of Powell County, Montana, has been reopened by Mrs. Fern Howard, its owner. Don Michelson is in charge of the work.

Coronado Copper & Zinc Company is reported to be negotiating with the *Mineral King Mining Company* to operate the latter's Montana property on a profit-sharing basis. Mineral King owns the *Tarbox* and *Meadow Mountain* groups of 32 unpatented claims, located in the St. Regis district near Saltese, Montana. They contain lead-silver ore.

WASHINGTON

American Zinc, Lead and Smelting Company has shut down its *Lead Hill* mine in Pend Oreille County's Metaline district, Washington because of lower zinc and lead prices, according to Dale I. Hayes, Spokane, the firm's western manager. Production was started late in 1951, with ore being trucked to the company's Grandview mill near Metaline Falls.

The company's *Grandview* mine lease operations are continuing at capacity, 750 tons daily. Diamond drilling on American Zinc's mineral right adjoining the Grandview lease under a $120,000 DMEA lead-zinc exploration project, is 75 percent completed and results to date have been "promising," Hayes said.

Admiral Consolidated Mining Company has added lead flotation cells at its Admiral mill near Leadpoint, Stevens County, according to W. C. Hawes, acting secretary-treasurer. Norman D. Lindsley, Colville mining engineer, has been named consulting engineer. He is directing a diamond drilling program to test downward continuation of zinc-lead ore values. Until production is resumed, it is planned to custom mill ore from the nearby *Lucille* mine, operated by *Pacific Northwest Mining Company.*

Grandview Mines, Inc. has started initial diamond drilling operations in Stevens County, Washington, where it has acquired extensive mineral rights. Site is a virgin 160-acre tract in a valley between the *Anderson* open pit zinc mine of *Goldfield Consolidated Mines Company,* and the *Admiral* mine of *Admiral Consolidated Mining Company.* The firm also is bulldozing jeep trails in the Northport mining district's Schultz Creek and upper Sherlock Creek areas for geological examination and prospecting purposes, according to Karl W. Jasper of Spokane, president.

Silver Mountain Mining Company of Tacoma, Washington is constructing a gold-silver-lead-zinc concentratiag plant at its property west of Tonasket in Okanogan County. D. H. Watts, Tacoma, secretary, said the plant is expected to be

continued on page 116

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PRODUCTS AND SUPPLIES:

Northwest News

Continued from Page 113

ready to start by mid-October. It will have an initial capacity of 250 tons a day, which would be increased to 500 tons. About 5,000 tons of ore have been stockpiled.

A $12,100 beryl exploration project has been approved by the DMEA for the *Railway Dike* pegmatite claims in the Colville mining district of Stevens County, Washington. A 90 percent government loan was obtained by Lawrence Hammond of New York.

The DMEA has signed a $23,651 lead-zinc exploration contract with *Pioneer Mining Company* of Colville, Washington.

Springdale Silica Sand Company has started producing three sizes of pure silica sand for Northwest markets, according to Frank Eichelberger, Spokane mining engineer, who heads the firm along with J. W. Melrose. The new processing plant is at Springdale, Washington, in Stevens County, 40 miles north of Spokane. The silica, which occurs in the form of sandstone at Lyon's Hill, eight miles west of Springdale, is mined by open pit methods. It assays better than 99 percent pure silica. Mineral impurities are removed by washing. About 25,000 cubic yards of the sandstone were broken in the first two months of mining operations. Diamond drilling is said to have proved at least 6,000,000 tons available. Initial production at the processing plant was 100 tons daily. Plans called for an early build-up to 250 tons daily.

Scheelite occurrences have been found on the *Four Metals* property near Nighthawk, Washington. The property had been slightly developed many years ago for lead-zinc but production had proved to be uneconomical. The scheelite occurs as inclusions in quartz lenses. Present work consists of mapping, road building, and preliminary sampling. Development of the property will probably begin this fall by the *Border Lord Mining Company* of Seattle, which has leased the property for 50 years. The company has also obtained an option to purchase the property for $250,000. Owners of the mine are James Stack of Oroville, and John Hancock of Okanogan.

An extensive diamond drilling program is planned by Columbia Lead and Zinc Mining Company of Spokane, Washington, at its property in the Metaline district. A diamond drilling machine has been purchased and a ventilating system completed at the Hoage tunnel. Good milling-grade, zinc-lead ore has been exposed in the tunnel over a length of 50 feet and widths of 7 to 15 feet, indicating the top of an ore body.

With the placing in operation of the eighth potline, Kaiser Aluminum & Chemical Corporation's Mead plant in Washington has become the largest primary aluminum reduction plant in the nation. The new potline adds nearly 44,000,000 pounds bringing the plant's total production capacity to 350,000,000 pounds annually. This expansion is part of the company's program to double its aluminum capacity by mid-1953 to about 816,000,000 pounds per year. Two potlines have been added to Mead now in the last 18 months. Other plants are being expanded, too, and a new eight-potline plant is under construction at Chalmette, Louisiana, which will be capable of producing 400,000,000 pounds annually.

DRILLING COMPANIES:

POSITIONS OPEN

Engineering, Technical, Mechanical

GEN'L SUPT., mine, mill, fgn.	$650
MINE SUPTS (2) U. S.	OPEN
ASST. MINE SUPT., fgn.	$465
KILN SUPT., cement, exp.	$650
MINE PHYSICIAN—surgeon, young	to $12,000
DESIGNERS, struct. & elect. U. S.	to $625
MINE FOREMEN, fgn.	$450-$550
MINE SHIFT BOSSES (3) fgn.	$400 & $500
MINE ENGRS., expd. U. S. & fgn.	$350-$475
JR. MINE ENGRS., fgn. & U. S.	$275-$405
GEOLOGIST, mine, U. S.	OPEN
SEISMO., party chief, U. S.	$600
SEISMO computer, expd.	$400
ASST. PETROLOGIST, fgn.	$300
MILL SUPT., fgn.	$700
METALLURGISTS, research, U.S. & fgn.	to $700
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ASST. MILL SUPT., flot. U. S.	$500
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METALLURGIST, smelter supt.	$500
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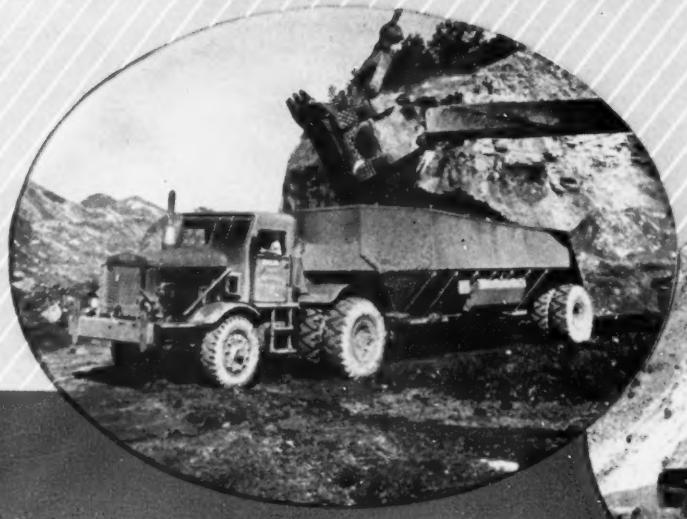

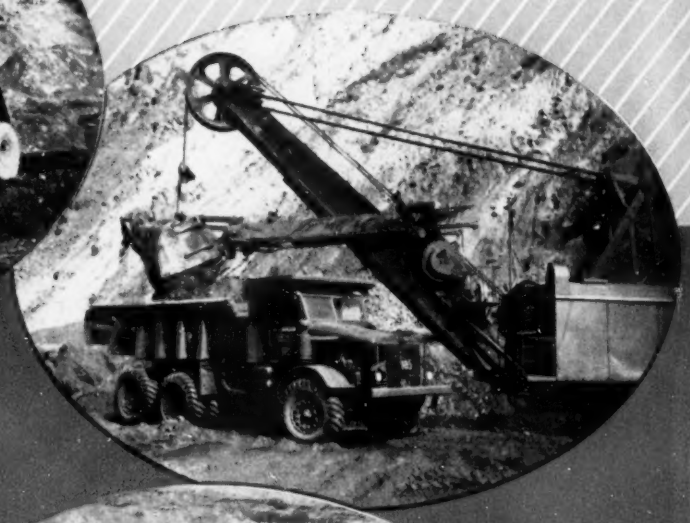

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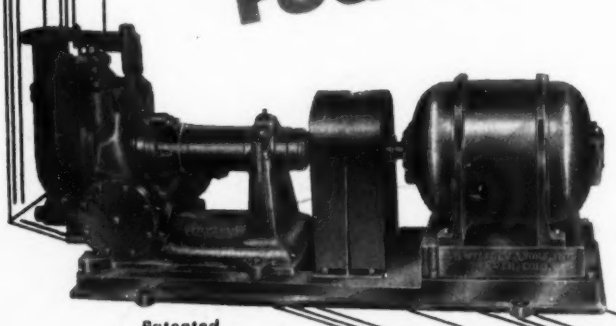

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